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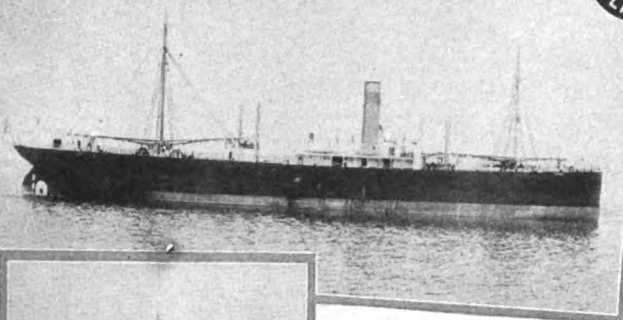
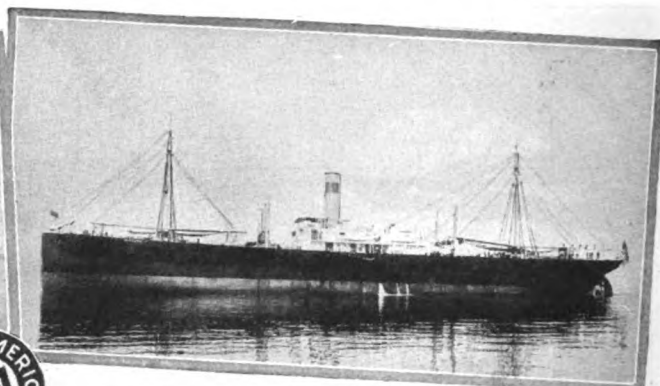
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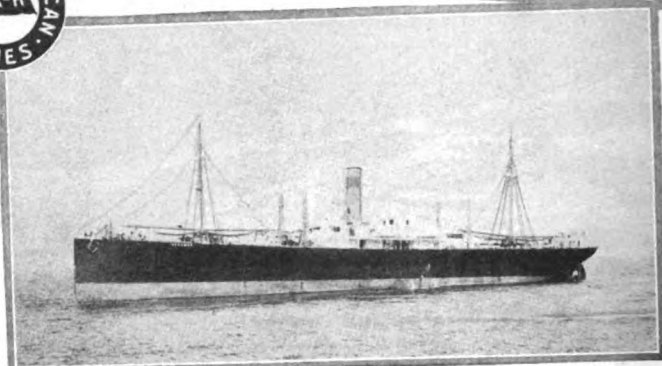
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Serves Vegetable Oil Traffic

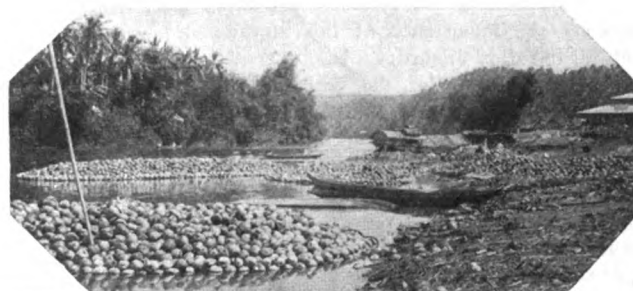
Terminal Built by State at San Francisco Among Best Equipped in World—Diversion of Business from Europe During War Aids Port

HANDLING of the tremendous traffic in vegetable oils and copra which has come to the United States as a result of the closing of many European ports by the great war, and the swift upward trend of prices for these oils in the United States, has been met in California with the largest and best equipped vegetable oil terminal and distributing center in the western hemisphere. This terminal, now in full operation, and handling im-

ports of approximately \$40,000,000 worth of vegetable oils and copra from the countries of the south Pacific, is located on Islais creek, in San Francisco harbor, and was constructed and is owned by the state.

The terminal is controlled by the board of state harbor commissioners, which has charge of all the waterfront of San Francisco. It is operated for this board and for the oil importers by the Associated Terminals Co., of which

John Barneson is president. The facilities include wharves, with water deep enough to accommodate any vessel which has as yet appeared on the Pacific, warehouses, pipe lines, spur tracks connecting with all the transcontinental railroads entering San Francisco, and a tank barge for use for transfer of oils from steamers to wharves. The facilities for receiving, storing and distributing the oil and copra at this terminal will compare favorably, and, in some fea-



SAN FRANCISCO'S VEGETABLE OIL TERMINAL, ONE OF THE BEST EQUIPPED IN THE COUNTRY. THE OCEAN STEAMER DOCKED ALONG SIDE HAS JUST ARRIVED FROM THE PHILIPPINES. ONE OF THE UPPER VIEWS SHOWS RAFTS OF RIPE COCOANUTS, THE ORIGIN OF COPRA, IN LAGUNA PROVINCE, PHILIPPINE ISLANDS. THE OTHER VIEW SHOWS THE COPRA CRUSHING AND OIL REFINING PLANT OF THE VEGETABLE OIL CORP. AT BERKELEY, SAN FRANCISCO BAY, WHERE THE RAW PRODUCT IS PREPARED FOR DISTRIBUTION

tures, are in advance of those of the larger ports of Europe, over whose wharves, prior to the war, millions of pounds of copra and millions of cases of vegetable oils passed annually.

The warehouses, which have a capacity of 1,000,000 cases of oil, have concrete floors and sumps for the storage of oil in any form of container. In addition to these warehouses, space is provided for the storage of an unlimited quantity of oil in the yards and on the open wharves, to which the cases and barrels can be unloaded direct from the ship.

San Francisco vegetable oil and copra importers have been granted first privileges on the long term leasing of a large area adjoining the terminal, and they have erected tanks for their own use of a total capacity of about 5000 tons, with more being erected. Oil from these tanks may be unloaded direct into tank cars for immediate transfer to any railroad, while from the terminal wharves it can be handled direct to inland, coastal, intercoastal, or ocean-going vessels. The system of distribution has been worked out with a comprehensive view to co-ordination of rail and water transportation facilities in a manner not before attempted in any publicly owned storage and distribution plant on the Pacific coast.

Among importers of copra in San Francisco are the Burns-Philip Co., Balfour, Guthrie & Co., Wolff, Kirchmann & Co.; Atkins, Kroll & Co., and Wightman & Crane, according to the San Francisco chamber of commerce, which, realizing the importance of this storage and distribution industry, has recently completed a survey of the vegetable oil and copra situation. The San Francisco companies having copra crushing plants in the San Francisco bay district are the Eldorado Oil Works, the Pacific Oil & Lead Works, and the Vegetable Oil Corp., each plant having a capacity of 4000 tons of copra every month.

In the report of its survey on this handling of these valuable imports, the San Francisco chamber says:

"San Francisco now has what is generally conceded to be the most completely equipped vegetable oil terminal, storage and warehouse plant on this continent, and importers of both vegetable oils and copra look forward to a steadily increasing demand for this class of raw products, a demand which will be the more easily filled because of the excellent storage and distribution facilities offered by the new terminal. For years Europe had controlled the sources of supply of foreign vegetable and animal oils, ports like Marseilles, Hamburg, Liverpool and Rotterdam having a movement of millions of pounds yearly.

"These oils not only enter in a basic

way into the making of glycerine for explosives, but many advances made in the hydrogenation and other processes applied to vegetable oils make them valuable for their use as food substitutes. In addition to this, they are used in the manufacture of laundry soap, paints, varnishes, printers' ink, imitation rubber fabrics, linoleum, leather tanning, tin plate cooling, core oil in castings, and other industrial and manufacturing purposes.

"Customs figures show that the principal vegetable oils of the \$40,000,000 worth imported through San Francisco last year were cocoanut, China wood, peanut, linseed, soya bean and rape seed. There were smaller imports and distributions of perilla oil, from Manchuria, and kindred types of oils. Copra, the dried flesh of ripe cocoanuts, is cured either by sun exposure, mechanical process of hot air, or by exposure to smoke in sealed rooms. The relative value of copra varies little because of the methods used in the drying. The original flesh of the cocoanut contains about 45 per cent water, 40 per cent of which is lost in the drying process and the remaining 5 per cent in the crushing, which latter is done largely in the United States. The main sources of supply are the Philippines, the South Pacific islands, Java, India and Ceylon. Copra also is crushed in Central America, but the comparative amount is small.

"Since 1915, the great bulk of the copra entering the United States has been through San Francisco and the other Pacific coast ports, especially San Francisco, and this is particularly true of the copra originating in the islands of the Pacific. Numerous sailing vessels loading lumber on the Pacific coast of the United States for delivery to the ports of New Zealand, Australia and other countries in the South seas, load back with copra, and more than 90 per cent of the copra coming from the South Sea islands is transported in these vessels to the United States. From other countries, the bulk of the copra is imported in steamers."

Exports of American coal overseas increased about 100 per cent in 1921 over 1913, says the fuel division of the department of commerce in a special review of last year's trade. Much of this increase was due to the British coal strike. Total exports of anthracite coal for 1921 were probably very slightly in excess of those for 1913, practically all of which went to Canada in both years. Exports of bituminous coal, including shipments to Canada and Mexico, were 7 per cent greater in 1921 than in 1913, the figures being approximately 20,690,000 tons for 1921, against 17,987,000 tons for 1913.

American Liner Sets New Record

Establishing a new speed record, a shipment of Japanese silk recently arrived at New York 14 days, 4 hours and 30 minutes from Yokohama. This surpassed all previous records by many hours. The shipment came across the Pacific in the shipping board express passenger liner WENATCHEE arriving at Seattle in 10 days, 8 hours and 18 minutes. It was immediately transferred to express cars and the balance of the long journey across the continent was done in 3 days, 20 hours and 12 minutes. Previously the record has been held by Japanese lines. Because of the great investment in silk shipments and the high rate of insurance, shippers demand the fastest transportation obtainable. Consequently keen competition exists among the various services for this business which runs into large freight charges each year. Silk imports landed at Seattle during December totaled \$12,000,000 in value.

Gets Big Crane Order

The contract for furnishing, installing and placing in operation 34 cargo handling cranes at piers 12 and 13 at Stapleton, Staten Island, New York, has been let by the city of New York to the Wellman-Seaver-Morgan Co., Cleveland. The successful bid was \$324,500. This is the most important crane contract which has been let in the eastern district in a long time. The contract for the installation of these cranes is a big step toward carrying out plans for New York harbor developments. The letting to the Wellman-Seaver-Morgan Co. followed the second opening of bids, on Dec. 1. The original bids were opened in October but these bids were protested. The low bidder in the first opening was the Heyl & Patterson Co., which named a figure of \$370,288.

Business conditions are quite favorable according to a report made by the Globe Engineering Co., 723-5 North Twenty-fourth street, Philadelphia. This company was organized early in 1921 by Anderson MacPhee, T. H. Johnston and G. R. Johnston to manufacture a line of marine specialties covering oil coolers, feed water heaters, evaporators, distillers and heat exchange apparatus.

Edwin Nichols, who has been associated with the Water Front Employers' bureau, at San Francisco, since its organization nearly a year ago, and was formerly with the sea-service bureau of the shipping board, has been named manager of the San Pedro office of the Employers' bureau. He succeeds Capt. Joseph Meaney, resigned.

Electric Drive for Leviathan

Saving May Be Effected by Salvaging Propulsion Units Scrapped as Result of the Naval Holiday

PLANS for reconditioning the LEVIATHAN were drawn about a year ago. At that time the shipping board had no intimation of the possibility of a naval holiday. To get the LEVIATHAN back in service under any scheme was the desire of the shipping board. But putting the LEVIATHAN in the transatlantic passenger service is one thing and making money on her under the American flag is another. It has been stated by the board and by private steamship operators generally that such a vessel would prove a constant deficit. Even after the ship is turned into an oil burner as now planned, it is not expected she can be operated without a loss. As an oil burner, the LEVIATHAN would be able to make a quicker turn around, and a few wages may be saved in the engine room, but the cost for bunker would be the same as for coal.

An opportunity now is presented to make the LEVIATHAN a passenger ship such as never before was operated in the mercantile services of the world. The United States navy has a number of electric drive units which would fit the requirements of this giant merchant ship. They are the electric drives which American builders were directed to construct for the navy prior to the Washington conference on the limitation of armaments. The government is going to pay for these electric drive units and certainly it would appear worth while to make use of at least one set on the LEVIATHAN if there are to be no more battleships built which they can equip. If the LEVIATHAN is turned into an electric drive ship, approximately \$500,000 a year in fuel bills alone may be saved on her, it is claimed. In addition her repair bills will be cut to a minimum as repairs are rarely necessary on an electric drive ship, and the crew of the vessel will be further reduced.

The electric drives which the navy has ordered for the new battle cruisers, now scheduled to be scrapped, are identically the units which would be required to drive the LEVIATHAN. As an example of the possibilities offered by the electric drive might be cited the case of the U. S. S. NEW MEXICO. This consists of two main turbo-generators rated at 11,500 kilowatts each at 80 per cent power factor and having an overload capacity of 25 per cent, four main motors rated at 7250 horsepower each and having

THIS article is based upon data prepared by five electrical engineers who are advocates of the electric drive as the most modern and economical form of ship propulsion but who prefer to remain in the background. Included also are data taken from the official reports to the navy upon the performance of electric drive as determined in thorough tests. MARINE REVIEW presents the views of these engineers in practically the complete form in which the facts were placed before the shipping board where they have been under consideration since last autumn.

an overload capacity of 25 per cent, two boosters for varying the current of the main field, two 300-kilowatt exciters for supplying the current to the main field and also certain electrically driven auxiliaries, together with a main switchboard, an exciter switchboard with the necessary wire and cable.

How Speed Is Economized

The NEW MEXICO, according to official reports on performance in the possession of the navy department, uses one generator for speeds up to 17 knots and two generators for speeds from 17 knots to full speed, which is between 21 and 22 knots. For speeds up to 15 knots the motors are run on a 36-pole connection, so that at 15 knots the turbine is running at its designed full speed; from 15 knots to full speed the motors are run on a 24-pole connection.

Sister ships of the NEW MEXICO, the IDAHO and the MISSISSIPPI, are fitted with direct connected turbines and have geared cruising turbines which is similar to the equipment now aboard the LEVIATHAN. The comparative results obtained aboard the NEW MEXICO and her sister ships may afford a measure on the economies which might be effected on the LEVIATHAN were that ship equipped with electric drive. The advocates of electric propulsion frequently have claimed it was superior to all other forms of propulsion at the cruising speeds, but the majority of these have been surprised by the showing made by the NEW MEXICO.

This showing doubtless is due to the

fact that no one made sufficient allowance for the saving due to shutting down one generator and all the auxiliaries that go with one of the condensing plants. At a speed of 10 knots the NEW MEXICO uses about 16.7 per cent less oil than her sister ships, or, putting it another way, her sister ships use about 20 per cent more than the NEW MEXICO. At 13 knots the figures are 29.9 per cent less or 42.7 per cent more; at 16 knots, 32.3 per cent less or 47.8 per cent more; at 19 knots, 28.6 per cent less or 40.1 per cent more; and at full power 24.4 per cent less or 32.2 per cent more, respectively. At 19 knots and also at full power the NEW MEXICO uses about 0.975 pounds of oil per shaft horsepower, and at 15 knots she only uses 1.1 pounds of oil per shaft horsepower. This is uniform consumption. After one year of service in the active navy, the commander of the NEW MEXICO gave a report as to the reliability of the machinery, having had nothing but the most minor troubles with her electric plant and there had been no navy yard repairs whatever.

Factors that prompted the navy to adopt electric drive may not be applied fully to the factors prompting the determination of a drive for a large passenger vessel. Even in the case of the navy the adoption of the electric drive brought strenuous protest and much hostile criticism, but experience has definitely proved the soundness of judgment. But the spending of any sum for electric drive on the LEVIATHAN must be justified by economic considerations. The ship must be competitive with the best products of other countries, which, operating under foreign flags, have some considerable advantage in lower operating costs. The largest of the British transatlantic passenger vessels now burn oil and to convert the LEVIATHAN to an oil burner merely will give her a competitive opportunity in one respect only, it is stated. But if turned into an electric drive, the saving in operating costs might be sufficient to give her a fighting chance with her British rivals, it is pointed out.

In large high speed ships the cost of fuel is great and is a large proportion of the total operating cost. The existing propulsion machinery on the LEVIATHAN, of which the reconditioning plans of the shipping board do not call for any alteration, consist of direct connected

Parsons turbines. These turbines are in good condition and are entirely fit to drive the vessel, but the replacement of this machinery by another type of equal or greater reliability and of a much greater efficiency is paralleled every day in various mercantile undertakings. Machinery of all kinds is being constantly replaced before it is worn out by newer types which will show a greater return on the investment.

At this time every effort is being made to get the American people enthusiastic about their merchant marine, and they will be when given reason to see that the ships which fly the American flag are superior in many respects to those of other countries. There is little question but that as a people they would be proud to say that such a palatial ship as the *LEVIATHAN* was superior to any in the world, chiefly because it was propelled by machinery built in this country. The likelihood of America building a new ship approaching the dimensions of the *LEVIATHAN* is remote and careful consideration might be given to the opportunity now afforded of making this ship the first great transatlantic vessel to be electrically driven.

In suggesting the adoption of the turbine electric propulsion, nothing new or untried is being offered for consideration. The electric motor and generators are similar to many others which have been in operation for years, and when properly designed have demonstrated their fitness for application to ships. Comparison between the best types of direct connected turbines and turbines running at their most economical speed driving propellers by electrical means showed the gain in fuel economy which might be expected. This has been shown in the case of the U. S. S. *NEW MEXICO*.

Studies Show Comparisons

There is little question but that even greater gain in fuel consumption would be realized by the substitution of turbine electric drive in the *LEVIATHAN* than that indicated in the comparison of the *NEW MEXICO* with the *IDAHO* and *MISSISSIPPI*. While the *LEVIATHAN* will have a somewhat greater fixed load on the boilers for heating passenger accommodations, etc., in the winter time, this will not be so great if every advantage is taken in the use of electrical devices. On the other hand, the turbines under consideration for the *LEVIATHAN* would be considerably more economical than those in the *NEW MEXICO* under full load conditions.

In order to eliminate theoretical discussion, studies have been based on the fuel saving shown in the battleship comparisons mentioned. With the improved steam consumption of the turbine pro-

posed for the *LEVIATHAN* a still greater saving would be shown. The price of \$14 per ton for fuel oil in all probability may be much too low a year or two hence, but that figure may be taken as a basis for computing the savings which might be expected from electric drive on this ship. These studies assume two crossings per month; assume four months full speed, 22½ knots; assume eight months reduced speed, 18 knots; full speed, hours per trip, 138, and hours per year, 1100; reduced speed—hours per trip, 172, and hours per year, 2750; and total hours, 3850. This calls for only 160 days per year at sea. On the basis of battleship performance, this would give at full speed, 62,000 horsepower, a saving of 0.31 pounds per shaft horsepower, per hour, or \$140,000 per year. At reduced speed, 31,000 horsepower, the saving at 0.45 pound per shaft horsepower, per hour, \$307,000 per year. This would mean a total saving of \$447,000 per year.

Maneuvering Made Easy

Turning again to the navy's record on the *NEW MEXICO*, there still is another and an important consideration to be given to the electric drive for large ships such as the *LEVIATHAN*. On the former nearly all the maneuvering in restricted waters has been done with one turbo generator. It has been found that more satisfactory operation is obtained when using one generator than when using two, and it has been customary, when in dangerous waters where it is desired to take all possible precautions, to use one generator for driving the ship and to keep the other turning over idle. If the ship is getting under way from an anchorage and has to turn, as soon as the anchor is up the signal is given for standard speed ahead on one side and the same speed astern on the other; with this arrangement the ship will turn absolutely on her heel without gaining ground either ahead or astern; with other engines, where it is not possible to regulate the speed so quickly and accurately, the probability of getting speed on the ship in one direction or the other is much greater. When operating with one generator the screws on both sides of the ship must run at the same speed, if run at all.

What a great assistance this absolute control would be in the case of such a ship as the *LEVIATHAN* is a point which can be attested by any navigator. It is also highly important to the owner and operator of such a ship as when maneuvering is made so simple and easy, there is less danger of accidents entering or leaving a port.

The exact cost of such an installation complete could only be determined after a careful survey by naval architects and marine engineers, but assuming that the shipping board would bear all expenses to which the navy has already gone in ordering the electric drive units for the proposed battle cruisers, and giving every consideration to ruggedness, simplicity and economy, this work might be completed for a little more than \$2,000,000. But if the shipping board is not required to repay the amount which has already been spent by the navy or obligated for the electric propulsion units, the cost of making this conversion on the *LEVIATHAN* would be almost negligible.

Plans showing the arrangement of the engine room of the *LEVIATHAN* with her present equipment and with the proposed electric drive, disclose the electrical equipment fits in almost as though the engine room had been designed to receive it. The cost of making the small modifications to the existing turbine seating and arranging for the motors would be but trifling, it is stated. It might be desirable to modify a certain number of the engine room auxiliaries to be driven by electric motors, so there would be only sufficient steam to heat the feed water. Improved efficiency of the propelling machinery would accomplish indirectly many other results which would have considerable effect in reducing operation costs of the ship. Some of the proposed changes are as follows:

(1) Approximately 25 per cent of the boilers could be dispensed with, giving the following advantages:

Cost of changing to oil firing would be reduced about 25 per cent.

Oil bunker capacity would be reduced about 25 per cent.

Space allowed for removing boilers would be available for cargo, steerage passengers, or any other purpose, thus increasing the earning capacity of the ship.

(2) Approximately 25 per cent of the pumps could be removed from the engine room.

(3) A great deal of piping, many valves and other fittings would be removed from the engine room. This would result in considerable saving in condensation and other losses.

(4) Maintenance of the engine room equipment would be materially reduced with the smaller amount of auxiliary machinery and the decreased number of valves which have to be maintained tight.

(5) The operating personnel of the engine room would be reduced with less machinery to be kept in operative condition and with the electric control fewer men would be required to maneuver the ship.

Plan To Remake the Leviathan

Reconditioning Specifications for This Tremendous Job Provide for Restoring a Magnificent Transatlantic Palace

TO RECONDITION the LEVIATHAN during 1922 is a job for shipbuilders which is of a magnitude sufficient to appeal to the imagination of the whole nation. Outside of naval architects and shipbuilders, the work involved in this possibly may not be fully appreciated. The mere statement of the millions which are to be expended in effecting the transformation of this hulk to a palatial transatlantic liner fails to indicate clearly what is involved. Here is a ship of which the Germans held the plans. Experienced English naval architects declared that it would be impossible to rebuild the vessel without obtaining the plans from the Germans, that it was utterly impossible to get plans of the ship other than from the shipbuilder's originals. But the Germans held out and demanded in payment for the plans what they thought they had lost in the value of the ship when the United States took her as a prize of war.

Saving a Million

Naturally the United States refused to pay the Germans the price they demanded for the plans and under the capable direction of W. F. Gibbs, the construction chief of the International Mercantile Marine Co., a small army of draftsmen were set to work on the hulk as she was moored to the army pier at Hoboken, N. J. They measured every foot on the LEVIATHAN and put it all down on paper. After many months, plans for reconditioning the ship were evolved, and these plans, according to the contractors who have bid on the work, were the most complete and detailed which have ever been issued on a job such as this. But to understand the magnitude of this work the dimensions of the ship herself must be considered.

The LEVIATHAN has 12 decks, lettered from A to L inclusive, and there are six elevators arranged to carry passengers from one deck to another. To compare a ship like this to a modern hotel tells only a part of the story, as the LEVIATHAN is much more than a hotel or magnificent club. Her size as set forth in the reconditioning specifications is as follows:

Length over all, 949 feet 9 inches
Length between perpendiculars (40-foot waterline),—928 feet 5 inches
Beam molded, 100 feet
Depth molded to D deck, 70 feet 4¼ inches

Frame spacing (general), 36.02 inches

Normal mean load draft, about 40 feet

Deadweight carrying capacity on above draft, about 16,240 tons

Capacity of fuel oil compartment (exclusive of fore peaks), 9616 tons

Capacity of fresh water compartments, 3470 tons.

Maximum shaft horsepower, about 100,000

Normal shaft horsepower, service condition, about 65,000

Normal speed, service condition, about 22 knots.

While the propulsion unit of the LEVIATHAN was gone over thoroughly by the navy yard after she had completed her service as an army transport, it is understood many minor repairs are to be made in addition to converting the ship from a coal burner to an oil burner. Also some modifications will be made from her original passenger carrying capacity to meet the modern demands of ocean transportation. Third class accommodations on the LEVIATHAN, for instance, will be better than second class accommodations on some transatlantic steamers, especially such accommodations aboard foreign steamers, and fourth class accommodations aboard this ship will represent the best immigrant quarters.

For first class accommodation, the reconditioned LEVIATHAN will provide 704 beds, 19 pullman berths and 250 sofa berths, giving her a total first class passenger accommodation for 973 persons. Second class she will carry 548 persons. The third class quarters will accommodate 944 and the fourth class 934 persons. This will make the new LEVIATHAN capable of transporting 3399 passengers. She will have officers' and crew quarters for 1100, thus being able to carry 4499 persons. The reconditioning plans decree that a portion of her old coal bunker space on H deck shall be provided with necessary access and ventilation to permit the space being utilized for the accommodation of 400 additional fourth class passengers in case of emergency. The potential carrying capacity of the LEVIATHAN will be nearer 5000 than 4500 persons. With such a population as this aboard, the LEVIATHAN represents something much

more than any hotel community in the United States.

When refitted, the LEVIATHAN will take on a typical Americanized appearance. The original plans for reconditioning called for the restoration of much of the German furniture and appointments. The new plans have discarded all this, and while the intention is to restore the woodwork and built-in furniture as far as possible, all the movable furniture will be of the most modern American manufacture. The heavy German appointments will be discarded completely and all of the depressing colorings will be entirely changed. The architect has endeavored to attain the impression of space and brightness and all the new furnishings and decorations will be made with that object in view. Generally all textiles in the decorations will be replaced with paint. That is in accordance with the modern ideas of decoration and of health standards. Consequently upon entering a public room or a stateroom on the LEVIATHAN, the passenger will gain the impression that he is the first to occupy those quarters. Even the slip-covers for the furniture in public places will be intended to give this appearance.

Use American Products

The woodwork in the first, second and third class public rooms as well as the woodwork in the officers, first and second class staterooms is in fair condition and this will be restored. In all other parts of the ship, the original grade of woodwork is to be rebuilt. But a special type of boards will be used in the first and second class accommodations and in the officers quarters. Against the sides of the vessel and against steel enclosures a spruce lining will be used and that faced with a special covering. These two specialties are typical American products. In the third and fourth class quarters, North Carolina pine will be used. The built-in furniture, which was removed when the Leviathan was used as a transport, will be restored and replaced where lost. The ornamental work, art glass and grills will be restored with the exception that all essential German motifs are to be eliminated. All German oil paintings and sculpture will be removed.

A gymnasium is located in the first class quarters and another in the second class quarters. These are to be

fitted out complete with American equipment. Practically all the furniture in the public rooms will be replaced with American-made articles. The specifications call for exact dimensions, grades of wood, finish and upholstery for such furniture in every case. Such newly designed furniture has been specified for the social hall, dining saloon, children's dining saloon, smoking room, library, winter garden, Ritz restaurant, tea room, lobbies, staterooms and suites in the first class quarters; for the social hall, dining saloon, smoking room, veranda, and lobby in the second class quarters; for the dining saloon, smoking room and ladies lounge in the third class quarters, for the officers' quarters and for the servants' dining saloon.

Provide Better Quarters

In providing these quarters, some new things are recognized. For instance, a veranda will be provided second class passengers, a luxury which is seldom provided other than first class passengers on other transatlantic liners. And the gymnasium for second-class passengers is another innovation. This class of accommodations on the LEVIATHAN will compare favorably with the first class accommodations on most transatlantic liners. The various public rooms provided for third-class passengers raise that class to a basis of comparison with higher classes on other steamers.

Furnishings for the first class quarters will be in keeping with the general idea of luxury which is to be given. As a matter of fact, these quarters will be equal if not better than the quarters provided for the best country clubs in America. The four rugs in the first class social hall will alone represent an outlay of \$12,000. In the other public spaces of the first class quarters, Axminster rugs will be provided. Wilton rugs will be placed in the first class staterooms. New oil paintings, in keeping with American themes, will be furnished to the public rooms and framed prints will be placed in the first class staterooms.

The government has had adequate experience in fitting out the GEORGE WASHINGTON, plans for which were drawn in accordance with the best American standards, and it is intended that the appointments of the LEVIATHAN shall represent an improvement. A great deal will be accomplished through the color schemes, as paint is to replace dust-collecting decorations in many portions of the ship. Even down to the swimming pool, the hand of American workmen will be recognized, as the tile on the bottom

and sides of that pool is to be removed and give place to a roughened cement surface, one that is far more acceptable to devotees of aquatic sports.

Wherever the old German equipment is left, it will be necessary to change the labels and affix new ones with American names. In all public spaces, little if any trace of the hand of the German will remain. In the galleys, however, it has been decided to utilize such equipment left by the Germans which is found to be in good condition. The galleys will be completely restored.

The original electric plant will be retained with the exception that one generator must be replaced. But the lighting fixtures will be entirely new throughout the ship and in accordance with designs provided in the new specifications.

In safety equipment, the ingenuity of the American will be readily apparent, for the LEVIATHAN as an oil-burner, is to be made the safest ship afloat, and far safer than when she was owned by the Germans. A new annunciator system will be fitted into the staterooms so that occupants will know what class of servant is at the door. The old manual fire alarm system will be rebuilt, but in addition to this the ship will have two automatic fire alarm systems installed. The one system consists of a series of pipes to the holds which will automatically give the alarm and indicate the location of a fire and at the same time provide a means for smothering such a fire. The other system consists of an automatic device which indicates the presence of a fire in any of the passenger quarters. In addition to this, a special fire-prevention device will be provided to smother any fire in the engine room or oil-bunkers.

For the convenience of the thousands of persons aboard, 600 telephones will be installed, so that there will be quick and easy communication with different parts of the ship. The six elevators will be replaced with new equipment. This, naturally, will be of the most modern American design. The present Anschutz gyro compass which the Germans used will be replaced by the latest Sperry merchant type of gyro compass. Navy standard wireless equipment will be provided.

Use War Invention

The steam heating system will be improved as well as the ventilation system. The heat in passenger quarters must meet with the specific standards, even in the north Atlantic runs during the coldest weather, which are demanded by Americans at home.

And as for improved ventilation, there will be installed 111 electrically driven fans, 57 supply and 54 exhaust. Clear view screens, an invention growing out of the experience of the war, will be fitted on either side of the bridge screen. A great part of the life boat equipment must be replaced, owing to the fire damage done through the burning of the pier next to where the LEVIATHAN is anchored.

Such in general will be the work that must be done on this ship to fit her once more for merchant trade. The specifications covering this work have all been embraced in one large volume of 12 titles. These titles are (1) general conditions and requirements, (2) fuel oil installation, (3) joiner work, (4) galleys and pantries, (5) airports, etc., (6) electrical installations, (7) pumping, sanitary, etc., systems, (8) deck, floor and plumbing drains, (9) steam heating, (10) ventilation, (11) topsides, and (12) lifeboats, etc. Separate volumes include the drawings and specifications for furniture and furnishings and still another volume embraces machinery. Taken all together, the several volumes of specifications embrace quite a library and it is possible here to indicate only the most general outline of what repair work is to be done. Thousands of dollars worth of equipment of all kinds, including all the various kinds of equipment which go into the building of the most modern hotels, will be purchased. Then there will be thousands of dollars worth of silverware, linen, and similar equipment and thousands of dollars worth of art wares.

Change to Oil Burner

Down in the engine and boiler rooms the most significant alterations are to be made as it is intended to convert the LEVIATHAN from a coal-burner into an oil-burner. This will make possible the simplification of the highly complex systems of piping, valves and controls which the Germans put into this vessel and which were long ago found to be too cumbersome to be efficient. The American alterations to the propulsion unit are expected to change this ship from a failure to a significant success.

The piping and equipment is required to burn at least one ton (2240 pounds) of oil per hour per boiler continuously in all the boilers. The double bottoms forward of a cofferdam to be constructed between frames 150 and 152 will be fitted to carry oil fuel and in addition the side deep tanks, port and starboard, Nos. 23 and 24, extending from frame 224 to

frame 270, will be fitted for the same purpose. Further, the deep tank No. 17 will be fitted for oil fuel. The existing deep tanks in the forward hold, Nos. 18 and 19, will be eliminated. Five new individual deep tanks will be built in No. 3 hold, and six tanks will be fitted in No. 2 hold. The present refrigerating machinery compartment aft of No. 17 tank will be eliminated and this space taken up by an oil fuel deep tank. Eight service tanks will be constructed in the present side coal bunkers, two in each boiler compartment, one on either side.

Fresh water will be carried in all the double bottoms. The present fresh water tanks aft of frame 150 will be

retained, and two new fresh water deep tanks will be constructed. Deep tanks between frames 224 and 245 will be arranged as settling tanks, the intention being to transfer the oil from the double bottom tanks to the deep tanks for settling and from these tanks to the service tanks at the sides of the boiler rooms. Duplicate pumps will be fitted in boiler room No. 4 as smaller pumps only in this room will be used when the ship is in port.

This section of the ship will be fitted with fire extinguishing apparatus. Complete specifications are provided for this part of the work as the provisions made against fire, now that the LEVIATHAN is to be changed to an

oil-burner, are considered most important. This special arrangement provides for a chemical medium which will smother any oil fire.

In all, the LEVIATHAN will be equipped with 25 double bottom tanks, 4 side tanks, 13 deep tanks and 8 service tanks. There are 4 boiler rooms on the ship containing a total of 46 boilers fitted into 8 firerooms, each boiler room being divided into two firerooms. One of these boiler rooms contains 10 boilers divided between two firerooms, the remainder of the boiler rooms contain 12 boilers each. The new equipment, of course, calls for new pumps for handling the new fuel, oil, and the usual auxiliary pumps.

Bids to Recondition Leviathan Are Low

ACCORDING to bids opened Dec. 30, the reconditioning of the LEVIATHAN will cost the Emergency Fleet corporation approximately \$6,700,000. The lowest bid was submitted by the Newport News Shipbuilding & Dry Dock Co., Newport News, Va., and while that bid was nearly one-half the highest of all the bids submitted, it is estimated by some of the most conservative shipbuilders that the Virginia shipyard has not underbid. If the LEVIATHAN were reconditioned in New York it would be necessary to transport machinery and supplies to the army pier where she is now located and have the work done across the pier. That would be extremely expensive. On the other hand the Newport News company can take the ship up to the yard and have the work done right in its own plant. The Virginia yard also has a complete wood-working plant and is fully equipped to handle the largest ship job, it having been equipped to build the largest super-

dreadnaughts ever planned for the navy.

Eight companies in all bid for the work. W. & A. Fletcher & Co. and the Bethlehem Shipbuilding Corp. both returned the specifications stating that they did not care to bid on the job at this time. Of all the north Atlantic yards, the Tietjen & Lang yard of the Todd Shipyards Corp. was the lowest bidder, but was more than \$1,700,000 above the bid of the Virginia shipbuilder. According to the specifications, all the bidders agreed to deliver the complete ship by March 15, 1923 provided the job were awarded on or before Jan. 15, 1922, otherwise they must be allowed 14 months within which to complete the work. One of the bidders, the Newport Shipbuilding & Supply Co., Wilmington, Del., did not bid on the total job, but offered to undertake everything with the exception of the oil fuel installation, the furnishings and decorations.

Separate bids were offered for the repair and alteration of the machinery. In

each case it was agreed by the bidders on this particular job that the work would be completed by Oct. 15, 1922, provided the contract were awarded on or before Jan. 15, 1922, and if not awarded until later the contractor must be given given nine months within which to complete the work.

Joseph W. Powell, president of the Emergency Fleet corporation was present at the opening of the bids. The work of opening was attended to by W. F. Gibbs, the naval architect of the International Mercantile Marine Co., who drafted the plans for the LEVIATHAN's reconditioning. P. A. S. Franklin, president of the International Mercantile Marine Co., agent for the government in caring for the LEVIATHAN, and various government officials were likewise present. Contractors, bidders and others interested in the opening packed the office of Mr. Gibbs' where the bids were opened.

Mr. Powell refused to commit himself

Complete Record of Bids Submitted for Reconditioning the Leviathan

	Newport News Shipbuilding & Dry Dock Co.	Todd Shipyards Corp.	Morse Dry Dock & Repair Co.	James Shewan & Sons, Inc.	N. Y. Harbor Dry Dock Corp.	Standard Shipbuilding Corp.	Warwick Machine Works, Newport News, Va.	Newport Shipbuilding & Supply Co., Wilmington, Del.
A	\$1,042,230	\$1,597,181	\$1,250,000	.....	\$1,673,730	\$1,840,560	\$2,247,062	.....
B	709,160	992,380	1,275,000	.....	936,900	1,736,356	2,341,236	.....
C	3,843,610	4,768,363	5,971,500	.....	7,519,770	6,615,753	5,762,318	\$5,998,598
Total ...	\$5,595,000	\$7,357,924	\$8,497,000	\$9,374,000	\$10,130,400	\$10,192,675	\$10,350,616	.....

Note: A—includes the oil fuel and auxiliary installation on the ship only; B—includes the furnishing and decoration of the ship only; C—embraces all the work required in the specifications other than A and B.

	Repair and alteration of the machinery	For steward's equipment (hotel supplies)
Newport News Shipbuilding & Dry Dock Co.....	\$515,000	\$677,000.00
Todd Shipyards Corp.....	523,656	739,736.00
Warwick Machine Works.....	629,931	672,770.01
Morse Dry Dock & Repair Co.....	692,200	587,303.20
James Shewan & Sons, Inc.....	725,000	
N. Y. Harbor Drydock Corp.....	766,714	
Standard Shipbuilding Corp.....	923,772	
Newport News Shipbuilding & Dry Dock Co.....		\$677,000.00
Cornell Emery Co.....		739,736.00
American Purchasing Corp.....		672,770.01
John Wanamaker.....		587,303.20
Bidders on parts of the hotel supplies:		
Gimble Bros.—\$539,066 (without the books).		
Raymond & Co.—\$35,312 for reconditioning the silver alone.		
J. R. Giboney & Co.—\$90,868 for part of the supplies only.		
Abraham & Straus offered itemized bid on certain supplies.		

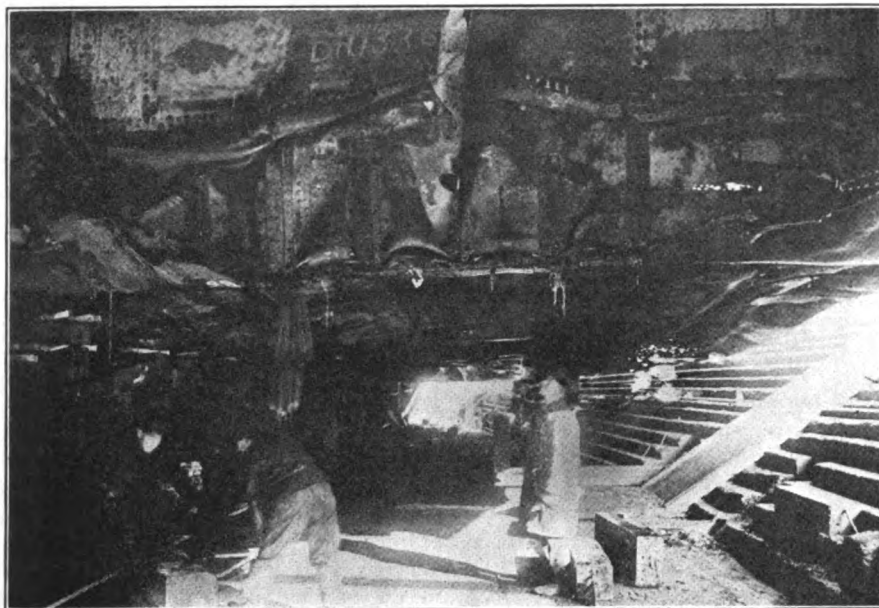
prior to the opening as to whether the government would award the total contract to the lowest sum bidder although he declared that if any changes were made in the specifications all the bidders would be given an opportunity to revise their bid figures. From the bids, no such technicality threatens to arise. The Newport News Shipbuilding & Dry Dock Co., was clearly the lowest bidder on the total reconditioning as well as on each separate division of the work. This

Grain Experiment May Change Ship Practice

The shipping world of the north Pacific has shown unusual interest in the shipment of the largest amount of bulk wheat in the history of the grain export movement from Puget sound and Columbia river. For years, the custom has been to ship in sacks and until this season all grain has been shipped in that manner with the exception of a few experimen-

LEY loaded at the port terminals at Seattle and Portland and the ABERCOS at the public terminals, Portland.

At Seattle, the HANLEY took 3500 tons or 160,000 bushels in less than 30 hours, loading only two hatches at once as the terminals are not equipped to load four hatches. At Portland, loading with four spouts, the ABERCOS received the first part of her cargo at the rate of 27,000 bushels an hour. This average, however, could not be maintained but the entire cargo



The bottom of No. 3 tank of the F. D. Asche, as shown in the photograph above, was ripped to pieces. One rectangular piece of steel, measuring about 20 x 14 feet remained attached to the ship by its port side forward corner only and hung down 10 feet below the ship's bottom. It was later cut away.

Photos Copyright, by Keystone



A great feat of marine engineering was accomplished when the tanker F. D. Asche was drydocked by the Robins Dry Dock & Repair Co. The ship was impaled on a rock on Little Bahama bank, which tore the hole in her as shown in the photograph below. The rock was blasted away and cribbing was placed to support the vessel until she could be moved to the dock.

company was also clearly the lowest bidder on the repair and alteration of the machinery. These two items constitute two separate contracts. Likewise the contract for the hotel supplies for the ships is a separate contract and can be awarded without jeopardizing the other two contracts.

On the job of furnishing the hotel supplies for the ship, the Virginia shipyard also offered a comparatively low bid, but two others submitted bids which were lower. The lowest bid on the hotel supplies was submitted by John Wanamaker, New York and Philadelphia.

O. A. Gilbert, Boston, has recently purchased the schooner ELISHA ATKINS.

tal parcels in bulk. The sacked custom arose from the earlier days when sailing ships carried this cargo and it was known to be unsafe to send vessels to sea, particularly around stormy Cape Horn, with grain in bulk. The export trade of the Pacific section has been slow to change but if the shipments now being forwarded in bulk are successful it is not unlikely that sacked shipments will soon be a relic.

In chartering two shipping board vessels on the government's new bareboat basis and rechartering these steamers for bulk grain, the Pacific Steamship Co., Seattle, has taken an experimental step which is being followed with interest. These freighters have already been dispatched with full cargoes for Europe. The HAN-

was loaded more rapidly than expected. The steamers VECHTDIJK and CARDIGANSHIRE each took 2000 tons in bulk.

Figures showing the cost of lining, the amount of waste or damage and the cost of discharging are eagerly anticipated in order to make comparisons with the prevailing custom of shipping in sacks. While all wheat comes from the interior in sacks and is bulked at terminal elevators for cleaning, the new method of shipping eliminates the cost of resacking for export and also reduces the loading time.

Pacific marine surveyors have adopted with slight modifications the rules of the New York marine underwriters for lining ships for grain. This action will tend to standardize practices.

British May Lower Costs in 1922

Shipowners, After Experiences of 1921, Determined
To Minimize Losses and Win Back Profitable Trade

BY CUTHBERT MAUGHAN
Shipping Editor, The Times, London

THE year 1921 passed unregretted by British shipowners. It was an exceedingly trying period for the shipping industry for many of the effects of the war period were acutely felt. Among the chief of these were the great production of new tonnage and the setback to the world's trade. Had the world's commerce progressed normally there might have been adequate employment for all the new shipping produced during the last few years, especially as a large amount of old tonnage would have been scrapped. But there is nothing to be gained now by indulging in many "ifs". The fact remains that important nations, notably, Russia, are out of action as far as overseas commerce is concerned, and other countries are unable to trade on a business basis, owing to their impoverishment, inability to balance their national finances and the resulting chaos into which their currencies have sunk. Much of Europe still is sick. Shipping provides the direct means by which overseas commerce is conducted. So, with the commerce of the world at a low ebb, it is natural an immense volume of new tonnage should have been left throughout the year without employment.

The passenger liner companies which, in accordance with the rule followed in previous articles of this series, may be considered first, fared best last year. Such profits as they were able to earn were due mainly to the always effective law of supply and demand. There was no real surplus of passenger liner shipping last year, because the heavy losses of this class of tonnage during the war period have not been replaced. Most of the surviving vessels, too, had been built on a comparatively low basis of cost. The exceptional demand for accommodation, which succeeded the armistice, appeared to be satisfied fairly early in the year. Yet, in view of the depleted fleets, there was a sufficient volume of passenger traffic to keep the vessels, as a rule, adequately employed. Still the conditions of passenger liner companies were not as favorable as during 1920. Most of the reports of the companies which appeared last year dealt with the results for the preceding year and, as this fact was not always

appreciated by the general public, probably a more favorable view of the shipping position was current than was justified. The reports to be issued within the next few months will fully reflect the conditions in 1921.

The Cream Thinned

The P. & O. report which appeared toward the end of the year was an exception, for it related to nine months of 1921. This company in late years has not disclosed its results in detail, but sufficient was shown to make it clear that the results were not satisfactory. The dividend on the common stock was maintained, but no bonus was distributed such as has been allotted for some years past. The company enjoyed, in fact, six months satisfactory trade and six months poor trade in which the expenses were not covered. The P. & O. company, which has widespread interests in eastern trade, may perhaps be regarded as representative of the best of British shipping, although probably it has too much of the cream of British business to be regarded as fully representative of all British shipping. The reason the second six months trading was so unsatisfactory was that while the volume of traffic declined seriously the working expenses did not fall in proportion. Some reduction already has been made in port dues, but the port charges in the United Kingdom still range from 50 to about 125 per cent above the prewar standard, and no doubt charges at many ports throughout the world show somewhat similar increases. The costs of labor for loading and discharging cargoes still are much higher than they were in the years preceding the war. Some reduction in the dockers' wages, in the port of London is to take effect early in 1922, but even then the wages will be left on a far higher basis than they were seven or eight years ago. Further, it is not merely increased wages that have to be taken into account, but also exacting trade union regulations which restrict the output. Enterprising shipping managers find restriction of labor a far more formidable handicap to trade than high wages. Some reduction was made in the spring in the salaries and wages of all the ships' officers and crews

and a movement with a view to a further decline now is in progress.

A considerable reduction in the cost of bunker coal has been made and also in the cost of insurance, and it may be assumed that working costs, taking every item into consideration, will be lower in 1922 than in the past year.

While the passenger liner companies should have the benefit of lower operating expenses in 1922, there will also be considerably more competition. A difficulty will be that much of the new tonnage which is to come into service will have been built at a high level of costs. Much increased competition is to be expected, especially in the North Atlantic trade. The White Star line is to include in its service the MAJESTIC built as the BISMARCK, of 56,000 tons, and the HOMERIC of 35,000 tons. Yet it should be remembered the liner will not do much more than take the place of the TITANIC, sunk in 1912, which except for the war, would have been replaced. The Cunard company has an important new fleet coming into service, no fewer than five new passenger liners, of between 15,000 and 16,000 gross tons each, being destined for the service between the United Kingdom and Canada. The Canadian Pacific company has three new ships, of somewhat similar tonnage for the same route. Clearly, there is room for some improvement in the present services between Europe and North America. Yet, taking into account the important services now being carried on under the American flag there will be far greater facilities in the North Atlantic trade in 1922 than there have been for many years past. Some of the largest ships, notably the BERENGARIA, formerly the IMPERATOR, and the MAURETANIA which are now being converted from coal burners will be driven by oil fuel as will the new Cunard liners. The experience with the OLYMPIC and AQUITANIA has been encouraging to shipping managers to extend the oil firing system to the other ships.

Last year was far from being a good one for the cargo liner ownerships. This type of vessel, as has been pointed out in previous articles, has been developing in importance for many years. When trade is good, the system of re-

gular sailings at fixed dates has advantages for both shipowners and shippers. In times of depression, the system operates unfavorably for the owner. He hesitates long before he will lay up a regular liner, if only because he considers it important to provide tonnage for such shipments as his regular supporters may be able to make. Heavy losses are known to have been made on individual voyages of cargo liners last year. It was common for vessels to leave the United Kingdom with only one-fourth or one-third of their cargo space filled. Often vessels which, in prewar years, would have sailed with large cargoes, left in ballast. Reliance, therefore, to a greater extent than ever, had to be placed on the homeward freights, mainly on food-stuffs or raw material for manufacture. General reductions took place in the outward freights. They were made, notably in the North American, South American, Levant, Indian, South African, Australasian and Far Eastern routes. In the Indian and Far Eastern trades two reductions were made in the summer and early autumn months within a few weeks of each other. The reductions, it was explained, at the time, were made with a view to furthering the British export trade. They were really made essential by lower freights which were being quoted by continental lines, notably Dutch and German companies. The revival of German shipping has been a real thing, and the lower working costs at continental ports, the far lower wages paid to continental crews, and the depreciation of the exchange value of the German mark, has produced a combination of circumstances of much gravity for British shipping. British companies openly admit they cannot carry goods at some of the low rates quoted by German lines. In some instances, as in the case of the South American rates, the freight accepted by the German companies would, it is asserted, only cover the loading and discharging expenses of the British vessels. Not only have the German companies accepted far lower rates from continental ports than those considered necessary by the British companies from the United Kingdom, but the German lines also have been willing to accept cargo from the United Kingdom for transshipment at German ports at much below the British level. It is known that shipbuilding in Germany is being subsidized by the German government, and there is reason to believe the German shipping

companies also are being financially supported by the German government, with a view to the re-establishment of the German mercantile marine in its prewar services.

For the owners of ordinary cargo tonnage the year was a trying time. The position of the older ownerships may be said to be, as a rule, still sound. Some of them have vessels remaining from the prewar period and so built on a comparatively low basis of costs. They have also been trained to proceed cautiously, to work out in

have, in the ordinary course, have succeeded them, were lost in the war.

Consequently, there has come into existence a new class of owner, frequently young and optimistic, but lacking in experience and mature judgment. Some of these owners bought their ships at high prices, regardless of the views expressed by the wise heads that a fall in freights and values must ensue. For a time, when freights were high, such newcomers to the business could not help making money. Every cargo offered meant a profit, so probably the managers scarcely troubled to work out detailed estimates of profit and loss. If they did so they likely lacked the knowledge to make trustworthy estimates. When the slump set in such firms were hit hard. Capital had been invited from the general public, and many investors responded on the strength of the inflated earnings of the war period. Many of those who subscribed new capital could not have realized that they were speculating heavily. Disaster has overtaken some of these new formations, and in at least one case the seller of the fleet at high prices was able under a mortgage to regain possession of the fleet, which was then sold again for a comparatively small sum. Companies which had been heavily capitalized to buy ships at high

prices could not afford to stand by and keep their vessels unemployed. Some of the older companies, with substantial reserves, could afford to do so. Even for the older and most efficiently managed companies, the times were difficult. Years ago the owner of an ordinary cargo vessel could always rely upon securing an outward coal cargo and then half the work, or nearly half, had been done. In recent years there has been no such easy opportunity of securing a freight for the outward voyage.

For months in the early part of the year, when work at the collieries was stopped, there were no outward cargoes at all, although a good deal of tonnage was given employment in the transport of American coal to Europe. In the closing months of the year there has been considerable revival of the coal export trade. It would have been more satisfactory if, owing to labor restrictions, serious congestion at the coaling ports had not set in, frequently involving long delays to shipping.

One of the most satisfactory features for the British cargo steamship owner was a demand for tonnage to load grain at Canadian ports as well as from the United States. This de-

British Shipping Index

PRICES OF REPRESENTATIVE SHIPPING SECURITIES IN 1921

	Highest	Lowest
	£ s d	£ s d
Securities		
Cunard £1 shares....	1 2 6 (Jan. 6)	0 15 6 (Nov. 2)
Furness, Withy £1 shares	1 5 9 (Jan. 6)	0 19 0 (March 1)
P. & O. deferred £100 stock	378 0 0 (Sept. 26)	258 10 0 (Nov. 3)
Royal Mail S. P. C. £100 stock	100 0 0 (Jan. 12)	77 10 0 (Nov. 30)

SHIP CONSTRUCTION IN UNITED KINGDOM IN 1921

	Gross tons
Tonnage launched in year.....	1,524,000
Tonnage launched in last quarter	461,000
Tonnage commenced in last quarter	54,900
*Tonnage building Dec. 31.....	2,640,000
*Nominal figure, includes 722,000 tons of construction suspended. Active work going forward shows decline in year of about 1,800,000 tons.	

SHIPPING MANAGEMENT FACTS IN 1921

	Highest	Lowest
	£ s d	£ s d
Time Charter Rate: Ordinary British steamers per ton deadweight per month.	0 10 0	0 4 6
Voyage Rates:		
Plate-United Kingdom grain, per ton....	3 0 0	0 16 6
Australia-United Kingdom grain, per ton.	3 0 0	2 10 0
Cuba-United Kingdom sugar, per ton....	\$10	\$5.50
South-Wales-Buenos Aires coal, per ton...	1 5 0	0 13 6
Fuel		
Coal: Best Welsh large S. Wales, per ton..	4 0 0	1 1 6
Oil: Per ton at Port Said.....	12 15 0	4 10 0
Wages:*		
A. B. seamen, per month.....	14 10 0	12 0 0
Firemen, per month.....	15 0 0	12 10 0
Assistant stewards, per month.....	13 15 0	11 5 0

*Some deductions from the lowest wages shown above were proposed and were under discussion at the end of the year.

detail voyage accounts for every charter proposed, and by their experience, they are able to take immediate advantage of any sudden demand which may spring up in the freight markets. The judgment of some of these owners was illustrated during the period of high freights. They sold their vessels at top prices and retired from business, leaving a void that cannot well be filled. For the sake of British shipping it was unfortunate that some of these ownerships should have retired from business, but, apart from the temptation of high prices for their vessels, there were cases in which the older heads of the firms were approaching the age at which retirement would have been normal and men who would

mand started earlier than usual owing to the fact little progress had been made in the previous year with the shipment of the 1920 crop. In August, September and October the business in chartering vessels to load at the St. Lawrence river ports approximated the activity of many years ago. In other directions the demand for tonnage was disappointing, and the autumn months brought little of that improvement which at that season is usually expected. For a considerable time comparatively high prices for grain in South America checked the demand. This was of a spasmodic character. In the early autumn it was substantial. Then quietness prevailed, which was followed at the end of the year by another outburst of chartering. It was notable that the outward coal freights and the homeward grain freights moved simultaneously, but in opposite directions, showing how a better outward freight could be made to compensate for a poorer homeward freight, and *vice versa*.

The tonnage taken to load grain from Australia was not of the same

large proportions as in 1920, and there should be a good deal of business to be done for Australia early in the new year. The scarcity of vessels in the East, owing to the lack of outward coal cargoes, led, in the summer months, to a stiffening of the homeward freights, but the demand was satisfied fairly quickly and in the autumn rates weakened. In the search for employment, vessels were sent to the Pacific coast of North America. Freights in both directions were cut, and in some cases vessels intended to load homeward from Europe could not find sufficient cargoes and they were diverted to the Far East.

Pessimism is not a habit which usually pays in business. Nor, as the experience of the last few years has shown, does undue optimism. The experienced British owner faces the new year with neither undue pessimism nor undue optimism. He knows that the present supply of tonnage is in excess of the world's demand, and while he may do much to encourage commerce by developing services he must be dependent, to a large extent,

on other factors, such as financial problems, which affect the world's trade for good or evil. He is quite sure, though, that he can best encourage commerce by providing cheap transport. This means reducing all expenses to a workable minimum and being satisfied with a comparatively small margin of profit. He looks to the port authorities throughout the world and to those who guide the policy of the workers at the ports, to help him. Gradually, he hopes, the trade of the world will improve, the older and less efficient vessels will be broken up, and the demand for shipping will approximate more closely to the supply. Then there will be justification for the building of more ships—many of them, probably, motor vessels. He hopes and believes that then there will be adequate remuneration for the capital employed. He does not expect the inflated profits of the war period to be repeated, but shipping cannot long be carried on at a loss. Since shipping is an absolutely essential industry, it follows that the business must be offered an adequate return for services rendered.

Late News from Foreign Shores

ONE of the characteristics of the British trader seems to be to minimize his gains and emphasize his losses. Perhaps this is a reflex of hundreds of years of association with the East. However, while a great deal is said in British shipping circles of the tremendous and very real losses of the past year, practically nothing is published concerning the operations of scores of astute English and Scotch shipowners who have made good profits on the decline in business just as they did on the rise.

A case in point is Walter Runciman & Co., Ltd., London, owners of the Moor line. Nearly two years ago, foreseeing the trend of events, this concern sold its entire fleet of 13 steamers for £1,800,000, or \$7,500,000 at current exchange. This sale netted the company about \$115 a ton. Following the sale, the Moor line was liquidated, but the stockholders instead of paying assessments received £140 for each £10 share held. In December 1921, a new Moor line was organized by Walter Runciman & Co., starting off with four new ships purchased from defaulting Scandinavian owners at about \$40 a ton. This is not the only British shipping company which, favored by seasoned experience, has profited in a similar man-

ner. The fact that these old line operators are coming again into the market for ships indicates in a general way that British shipowners feel the trough of the depression in world commerce has been reached.

* * *

BRITISH shipping companies have reduced their freight rates on general cargo from the United Kingdom to the Pacific coast of North America to 25 shillings (\$5.25) per ton, as compared with a previous rate of 40 shillings (\$8.40) per ton. This is via the Panama canal and on favorable cargo, shipowners are willing to shade the current rate to 20 shilling per ton (\$4.20) minimum.

* * *

NECESSITY for further reductions in the cost of handling cargo in Great Britain was emphasized by Lord Inchcape in his recent address at the annual meeting of the Peninsular & Oriental line. He said that 650 British ships aggregating 1,117,092 tons are now laid up in the United Kingdom. This is 5.9 per cent of the total British merchant fleet. Lord Inchcape attributes this inactivity partly to the excessive cost of handling cargo in Great Britain

which he says is 6 shillings (\$1.25) a ton at Middlesbrough, against 2 shillings (\$0.42) a ton at Antwerp. The low charges at Antwerp are perhaps accountable for the importance of this port in the trade of the continent. In 10 months ended Oct. 31, 1921, Antwerp shows an aggregate tonnage entered of 9,189,763 tons, against 7,778,355 tons for Hamburg, 2,823,364 tons for Amsterdam and 9,215,882 tons for Rotterdam.

* * *

AS INDICATIVE of the low value of ships at the present time an auction held recently at the Baltic exchange, London, is of special interest. A fleet of 10 cargo steamers aggregating 41,500 tons, the bankrupt Maindy fleet, was sold in 10 minutes for £290,000, or \$1,215,000. This works out at \$29.30 per deadweight ton, a low figure considering that all of the steamers were practically new. The fact that the whole fleet was sold in such short order indicates there is a market for tonnage at the present levels. The purchasers were Llewellyn, Merrett & Price, Cardiff, Wales, who expect to use the ships in the coal business which is showing some improvement. Welsh coal exports in fact are now about three-quarters of prewar level although freight rates are on an unremunerative basis

Marseilles Wins Place as Port

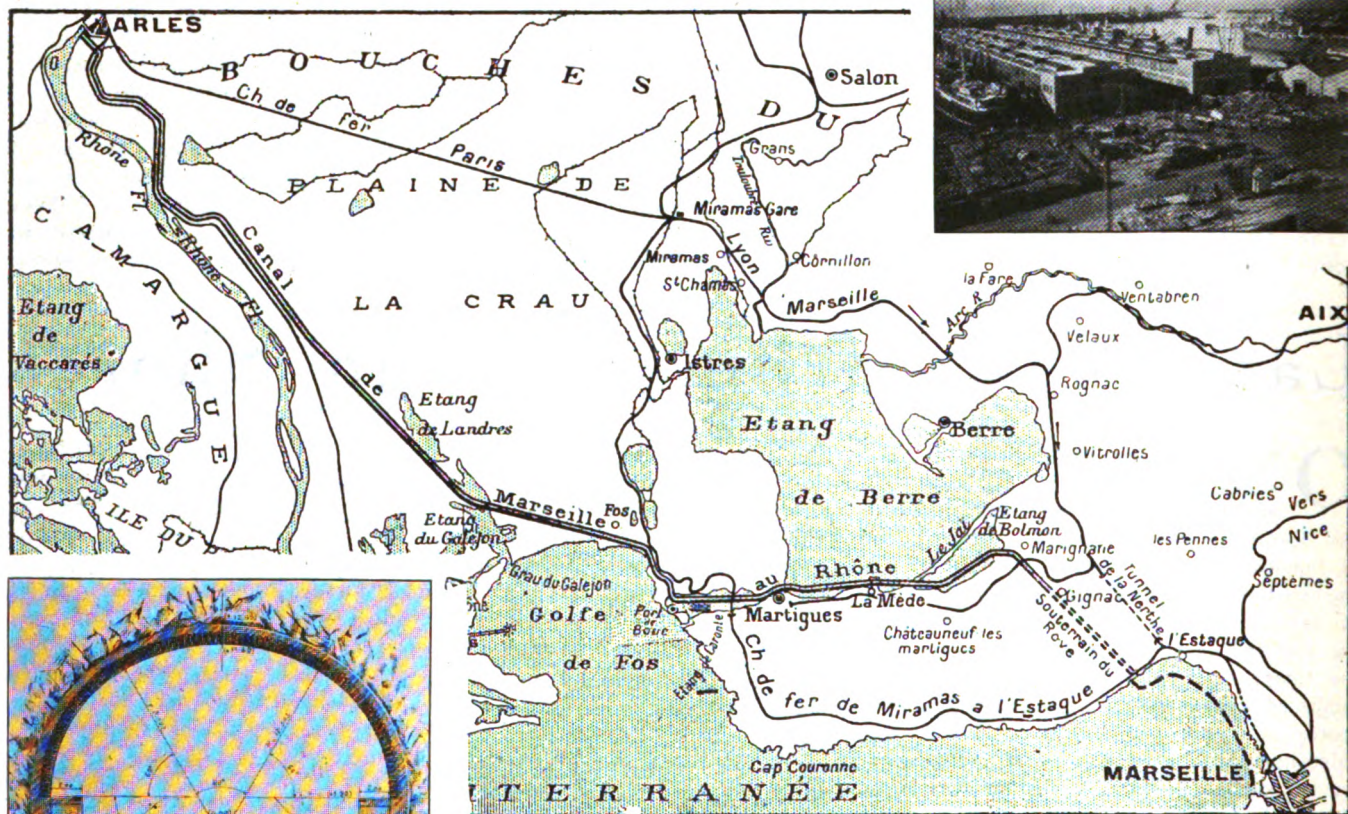
Years of Competition with Genoa To Be Rewarded
When the Rhone Canal Finally Is Completed

BY FRANCIS MILTOUN

MARSEILLES is the terminal port, the chief gateway and the largest traffic port of France with North Africa, the Far Eastern colonies and the Near East. It possesses one passenger line, that of the Fabre Co., recently acquired by the Compagnie Generale Transatlantique, running passenger and freight steamers to North American

that from 1893 to 1913, berthing space in the port of Marseilles had increased only 17 per cent while the traffic had increased 82 per cent. The traffic at this time surpassed that of Bordeaux, La Havre and Dunkirk combined. The entire berthing accommodation of the port has increased from 60 acres to 530 acres in a century and comprises 10 distinct basins, with

in the Lazaret basin. The net profits in 1919 were 2,982,000 francs, which provided a share dividend of 25 per cent. Marseilles is the first and only among European ports to have its Wilson dock. This dock, the Bassin Wilson, came into being with the establishment of the A. E. F. base



CANAL EXTENSION WHICH IS EXPECTED TO INCREASE TRAFFIC THROUGH MARSEILLES. AT LEFT, CROSS SECTION OF TUNNEL SECTION OF CANAL. ABOVE, WILSON DOCK AT MARSEILLES

ports and still others to South and Central America and the Antilles.

The position of Marseilles is the result of a long struggle to compete with Genoa as a seaport gateway to Central Europe in general, and Switzerland in particular. In spite of the intense rivalry between the two ports, the advantage seems to lie with Marseilles. The only objections to the port as now operated will be changed when the Marseilles-Rhone-Switzerland-Rhine project is carried to completion. It is a recorded fact

56 kilometers of railway sidings and 210 hydraulic, steam and electric cranes.

Accessory to the port is the Compagnie des Docks et Entrepots with a working capital of 39,000,000 francs, which operates docks and warehouses. This company was created in 1859. Besides warehouses and cold storage plants, it owns and operates the local graving docks, the largest of which has a length of 172 meters.

The cold storage plant has recently been increased from a capacity of 1500 tons to 9000 tons and a smaller auxiliary plant has been established

in 1918. The pier space with enclosed sheds is practically half a kilometer in length, along its three sides. Entrance from the open Mediterranean is through a deep water channel, 300 feet wide. The quays have a constant depth of water alongside of from 36 to 40 feet. Eight electric cranes, bought of the American army when it withdrew, form a part of the freight handling equipment of this model dock.

Another modern dock is the Bassin Mirabeau, adjoining the Wilson dock. This will have, when completed, an

entire berthing space of over two kilometers in length, with a continual depth of water alongside of 40 feet.

Modern installed fuel oil facilities in the port of Marseilles are as yet embryonic, though a beginning has been made. Reservoirs have been built at heavy expense on the heights of Les Ayglades overlooking the Estaque basin and three kilometers away. From here the oil will flow to the fueling slips by gravity. A quadrupled pipe line in and out provides for the handling of well over 6,000 tons of fuel oil per day. A number of floating tank barges are also available for fueling steamers which may not find a berth vacant in the Estaque basin.

Entrances and clearances in the port numbered in 1870, 18,153 units of 4,373,000 tons; 1880, 19,624 units of 7,235,000 tons; 1890, 18,074 units of 9,918,000 tons; 1900, 17,254 units of 12,376,000 tons and 1913, 17,278 units of 21,091,000 tons.

Foreign Ships Dominate

During the war there were notable fluctuations but in 1918 the figures were respectively 8706 units and 7,501,000 tons. Some improvement took place in 1919 and 1920 but it is hardly likely that 1921 figures will show any marked increase. The port is actually encumbered at this time with ships and steamers laid up with skeleton crews.

Taking the year 1913 as typical, the nationalities of the shipping arrivals at Marseilles were about equally divided between the ships of foreign flags and those of France. Today the foreign flag ships and steamers predominate.

The merchandise movement of the port of Marseilles in 1910 was 7,640,000 tons loaded and discharged. This had increased in 1913 to 8,940,000 tons, corresponding to a movement of 500 tons per square meter of wharf space. It is not expected that a cargo movement of 20,000,000 tons on the new berthing space already provided and in projection will result in any greater congestion than was noted in 1913. This estimation is for a cargo movement of $2\frac{1}{2}$ times what it was on the eve of the war.

Apart from foodstuffs the principal imports at Marseilles susceptible of interesting American shippers are coal, petroleum, sulphur, copper, etc. Average figures of the latter years before the war were as follows, but all items except coal and petroleum products have fallen off considerably since the armistice: Petroleum products, 131,668 tons; sulphur, 121,805

tons; copper, 5222 tons; iron ore, 4224 tons; scrap, 3836 tons; tin, 3050 tons; tin plate, 2110 tons; copper scrap, 1208 tons; plates and sheets, 1775 tons; zinc, 750 tons and lead, 21,500 tons.

The average weekly arrivals and clearances in December 1920 were 161 steamers, of which 64 were passenger steamers. Weekly cargo discharged was 68,638 tons; passengers disembarked, 4182. Cargo loaded and exported ran to 31,496 tons, not including coastwise trade. Coal stocks, bunkers and all other, held the same week amounted to 227,000 tons. Dockers employed daily numbered 4,000.

Cargo discharged during the last week of June, 1921, totaled 52,311 tons and loaded 27,555 tons, indicating the volume of shrinkage of business during the first six months of 1921.

One of the greatest accessories of a modern seaport known is the Marseilles-Rhone canal, by which seagoing barges and other self-propelled craft may ultimately penetrate to the heart of France, to the great silk capital of Lyons, to the metallurgical centers of Saint Etienne, Creuzot and Chalon, even by transshipment to Strassbourg and the Rhine cities and towns and western Switzerland. With such territory as this to draw from and no competition, the port of Marseilles is destined to prosper and outdistance all other combined efforts in the same field. The national government, the department of the Bouches du Rhone and the city of Marseilles are to share the expense of 131,712,281 francs which this work is to cost.

The length of the dike, or mole, separating the Marseilles-Rhone canal from the open Mediterranean is over five kilometers. The canal proper begins with a section of 7.12 kilometers tunneled through the mountain chain of the Nerthe at La Rove. Here the width is 22 meters, height to ceiling of the tunnel 14.4 meters, approximately three times the dimensions of the usual double track railway tunnel of Europe. A 2-kilometer stretch from Gignac at the north entrance to the tunnel leads to the Etang de Berne and Martigues, from where a previously existing canal has been enlarged running from Port de Bouc to Arles, where the Rhone is reached. Depth of water throughout will run from 7 to 9 feet.

Burmeister & Wain, marine engineers and shipbuilders, Copenhagen, Denmark, have just published an unusually complete and interesting 172-page catalog, commemorating their fiftieth anniversary.

In addition to a history of the firm of Burmeister & Wain, the catalog contains numerous illustrations of the shops of the company in Copenhagen, and their products including interesting early types of marine steam engines. Numerous illustrations and details also are given of the diesel engines which the company has been especially prominent in developing during the last few years.

More Vessels Return to Active Service

Movement of vessels which have long been idle on the northeast coast of Great Britain is a hopeful sign. From the Tees, two large ships which had been laid up for 12 months have recently departed, one to the east and another on an Atlantic voyage. Chartering of coasting vessels is more active and outward freights are more in evidence. Rates of pay of British seamen have not yet been adjusted to present day conditions. Crews on German traders using the northeast coast are reported to range around £2 10s (\$10) per month. This is about one-fifth of the pay of seamen on British vessels.

Among the freights and fixtures recently made are: Genoa (4000) 13s 4½d (\$2.67); Antwerp (1100) 6s 9d (\$1.35); Bruges (1600) 6s 4½d (\$1.27); Port Said 16s (\$3.20); Algiers 11s 6d (\$2.30); Bordeaux 8s 3d (\$1.65).

Glasgow Yard Launches Coasting Steamer

The shipyard of Yarrow & Co., Ltd., at Glasgow, Scotland, has recently launched the coasting steamer KYANITE, built and engined by the company for William Robertson, of Glasgow. The KYANITE is a well deck vessel, having forecastle with long raised quarter deck and bridge combined, the machinery being placed aft. The deadweight capacity is 800 tons on a draft of 13 feet 6 inches. The length is 175 feet between perpendiculars, breadth 28 feet and depth 13 feet 6 inches. Two hatches are served each by a derrick and a 3-ton winch. Triple expansion engines derive steam from two boilers, 10 x 11 feet, designed for a working pressure of 180 pounds per square inch. The vessel will steam at about 10 knots and is fitted with electric light throughout. The KYANITE is a sister vessel of the ESSONITE, launched about a month previously for the same owner.

The shipping board steamers ALCONA, DADE COUNTY and NARCISSUS, which arrived recently at Hampton Roads from European ports, will be turned back to the shipping board for lay-up at Camp Eustis.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

RICHARD H. FARLEY as passenger traffic manager, THOMAS R. THORNE and D. D. WEIPERT as assistant passenger traffic managers in charge of first and second class departments, and DAVID LINDSAY, assistant passenger traffic manager in charge of the third class department have been appointed by the International Mercantile Marine Co., New York. These promotions were occasioned by the retirement of W. W. JEFFERIES, passenger traffic manager since 1906 and a member of the organization since 1882.

Mr. Jefferies joined the staff of the old Inman line as an office boy nearly 40 years ago, and by successive promotions rose to the position of passenger traffic manager of the associated lines of the International Mercantile Marine Co., which include the American Red Star and White Star lines. For nearly two years, Mr. Jefferies' health has necessitated his absence from duty for prolonged periods, and at his own request he was retired from active service.

Mr. Farley is well known in marine circles. He was passenger manager of the Dominion line, Boston, at the time of the formation of the International Mercantile Marine Co., and when the merger took place and the offices of the several lines were combined in Boston, he was appointed manager of the third class department, which position he held until April 1906. He was then transferred to New York as associate manager of the third class department with the late S. S. Cortiss. On the retirement of Mr. Cortiss, he was placed in entire charge of the third class department of the associated lines with the title of assistant passenger traffic manager. During Mr. Jefferies' illness he has been acting head of the passenger department, to which he has now been promoted as passenger traffic manager.

The three newly appointed assistant passenger traffic managers have also been with the company for many years. Mr. Thorne entered the employ of the Red Star and American lines 28 years ago under Mr. Jefferies, during which time he served his apprenticeship in the victualling department, and the accounting department, and until his appointment as assistant to the passenger traffic manager a few years ago was in charge of the

first class department of the Red Star and American line services. During the war Mr. Thorne served as purser of a transport.

Mr. Weipert also rose from the ranks in the company and for the past several years has been in charge of the first class department of the White Star line's New York-Southampton service. He joined the White Star line 45 years ago.

Mr. Lindsay has been with the company for 30 years and for several years was in charge of the Washington office of the International Mercantile Marine Co. Since his return from Washington he has been one of the managers in the first class department, and for several years was in charge of the publicity and advertising of the company. During the past year he has been in charge of the third class departments of all associated lines.

P. M. S. CHEDBURN has been appointed general manager of the Ocean & Inland Transportation Co., steamship manager, agent and contractor for inward and outward freight, with offices at 11-19 Moore street, New York.

SIR JAMES McKECHNIE, managing directors of Vickers, Ltd., of Barrow, England, came to the United States recently for a study of shipbuilding conditions in the United States, and particularly with reference to the extent to which shipbuilding will be affected by the conference on the limitation of armaments.

H. B. ATKINSON, formerly of Callaghan, Atkinson & Co., now is on the staff of the chartering department of the Potter Steamship Co.

J. H. GRAVES of the International Freighting Corp., has been elected to the board of governors of the United States Steamship Operators' association, succeeding CHARLES T. MEGEE.

RALPH O'SULLIVAN, at one time on the staff of the International Mercantile Marine Co. at Philadelphia, has been made manager for Sullivan & Co., Chicago, freight agents of the French line.

R. A. GILMORE, formerly secretary of

the bulk cargo conference, which has been abolished, has succeeded P. K. CROCKER as supervisor of European trades of the shipping board, Mr. Crocker becoming assistant to the traffic manager.

H. F. DAVIS has resigned as president of Davis & Gilchrist, Inc., New York, export freight contractors, to engage in another business. R. A. GILCHRIST has been elected president, C. A. SULLIVAN vice president, and A. E. RYAN secretary and treasurer.

THOMAS WARD has withdrawn from Bane & Ward, New York, custom house brokers and general forwarding agents, the company now being in dissolution. WILLIAM L. BANE will continue the business.

J. J. SULLIVAN, formerly of the States Marine & Commercial Co., has joined the staff of P. V. Gioe & Co., 12 Broadway, New York, steamship agents and brokers.

MAXWELL J. AUTH has been elected president and treasurer of the Gardner Shipping Co., 24 Stone street, New York, WILLIAM F. THOMPSON vice president and S. I. CANTOR secretary.

V. M. CAROLIN and GEORGE F. PARTRICK have organized Carolin & Partrick, 78 Broad street, New York, to act as steamship agents and ship brokers. Mr. Carolin who formerly was with M. H. Tracy & Co., has been in business for himself at 78 Broad street and Mr. Partrick has been with Harriss, Magill & Co., the Atlantic Chartering Co. and A. C. Elliott & Co.

HAROLD C. BURCHARD, son of D. W. BURCHARD, for several years district manager of the shipping board in the Seattle district, has been appointed freight traffic manager for Frank Waterhouse & Co., Seattle. Mr. Burchard returned recently from Hongkong, China where he represented his present employer for more than a year. He succeeds PERCY S. LAING who resigned to enter business for himself.

CAPT. N. E. COUSINS, for many years

master of the Admiral line's express liner **PRESIDENT** operating between Los Angeles and Seattle, has been assigned to command the company's new steamer **RUTH ALEXANDER**. He has gone to New York to bring the new vessel to the Pacific. **CAPT. GEORGE H. ZEH** succeeds to the command of the **PRESIDENT**, his former position as port captain being filled by **CAPT. R. C. BRENNAN**, recently returned from the Orient.

C. S. HOLMES, formerly resident agent for Struthers & Dixon at Seattle, has formed the **C. S. Holmes Shipping Co.** which has taken the agency for the Intercoastal Sea Carriers, Ltd.

WILLIAM THOMPSON, district manager at Norfolk, Va., for the Texas Co. has been elected president of the Hampton Roads Maritime exchange for 1922.

WILLIAM HOLMES DAVIS, president of the Virginia Forwarding Corp., Norfolk, Va., is the new president of the Hampton Roads Foreign Trade club.

B. C. COLONNA, of the Colonna Marine Railway Corp., Norfolk, Va., is the new president of the Norfolk Ironmasters association, an organization of ship repair plants.

CAPT. GEORGE F. WAITE has recently been appointed district agent of the shipping board at Boston, succeeding **P. T. LACY**.

P. K. CROCKER, who has been superintendent of the European trades of the shipping board's traffic department of 45 Broadway, New York, has been made assistant to **GEORGE H. WELLS**, traffic manager.

C. C. RODRIGUEZ has been made vice president and **J. P. RODRIGUEZ** secretary of **W. W. Battie & Co., Inc.**, ship brokers, New York.

SHING FAN LAM has resigned from the China Mail Steamship Co. to become manager of the Chinese department of the Anglo-California Trust Co., San Francisco.

G. A. BINZ, assistant sales manager of the American Steam Gauge & Valve Mfg. Co., Boston, has been appointed sales manager of that company effective Jan. 1.

SIR ASHLEY SPARKS, president of Funch, Edye & Co., has been elected chairman of the board and is succeeded as president by **ROBERT H. GOODWIN**. Other officers of the company are: First vice president, **WILLIAM L. WALTHER**;

second vice president, **C. H. BETTS**; secretary, **GEORGE ROSSEN**; and treasurer, succeeding Mr. Goodwin, **WILLIAM M. GAVIGAN**.

CAREY W. COOK, assistant to **THOMAS GRAHAM**, vice president and general manager of the Pacific Mail Steamship Co., has resigned to devote his time to his personal interests.

E. E. EMBREE, conference secretary of the shipping board, has resigned to become associated with the bond department of Hambleton & Co., 43 Exchange place, New York.

HARRY W. FAWKE, formerly superintendent of hull construction of the Moore Shipbuilding Co., Stockton, Cal., and **EDWARD MCCARLEY**, also formerly with the Moore company, have organized the Terminals Iron Works to operate the plant of the Stockton Iron Works.

R. F. HOYT has been elected first vice president of the Atlantic, Gulf & West Indies Steamship lines and **C. N. WONACOTT** second vice president and secretary. **GEORGE P. DYER**, vice president of the Atlantic Gulf Oil Co., has been made a director of the steamship company.

CHARLES I. ANDERSON has been placed in charge of a branch office opened at Oakland, Cal., by the Williams Steamship Co.

L. WILDES, port agent of the Ocean Steamship Co., Savannah, Ga., was elected one of the vice presidents of the Traffic Club of New England, at its recent annual meeting in Boston. Other officers elected included **P. L. STUART**, New England agent of the Great Lakes Transit Corp., as secretary-treasurer, and **SIDNEY J. JACKSON**, manager at Boston, of the International Mercantile Marine Co., one of the directors for the 2-year term.

J. V. C. COMFORT has been appointed manager of the Pacific Mail Steamship Co.'s Panama line and **THOMAS JAMES** has been named to succeed Mr. Comfort as operating manager.

WALTER A. SEAT, for three years traffic manager of the California board of state harbor commissioners, has resigned to open a traffic office in San Francisco with **L. A. BAILEY**.

HARRY FIRMAN of the Red Hand Compositions Co., has been elected president of the Marine Painters' association, composed of companies engaged in ship painting at the port of New York. The

other officers are: Vice president, **JOHN C. HILDEBRAND** of the Baltimore Copper Paint Co.; treasurer, **JOHN C. HARLAND** of Harland & Little, Inc.; and secretary, **HENRY C. HUNTER**.

HUGH GALLAGHER, formerly general eastern agent for the Admiral line, at New York, has been appointed district manager of the company's San Francisco branch, and has taken charge of the offices at 112 Market street. **M. F. CROPLEY**, formerly assistant general manager at San Francisco, has been returned to that city, as assistant general freight agent. Mr. Cropley was transferred to Portland, Oreg., as manager of that district some months ago. He succeeds **T. B. WATSON**, who has been transferred to the Admiral's traffic department in Seattle. **B. F. BUSH**, who worked under Mr. Cropley at Portland, succeeds him as district manager there.

HENRY T. FORTMANN retired Jan. 1, 1922, from the presidency of the Alaska Packers' association. He becomes chairman of the board of directors, and his place as president will be filled by **WILLIAM TIMSON**, vice president, who has been closely associated with Mr. Fortmann for a number of years. Mr. Fortmann has been president of the association for 29 years.

Buys Passenger Liner

To replace the express liner **GOVERNOR**, sunk in Puget sound water last April, the Pacific Steamship Co. has purchased from the shipping board the former German steamship **CALLAO**, once known as the **SIERRA CORDOBA**. The vessel will be named **RUTH ALEXANDER**, in honor of the wife of **H. F. Alexander**, president of the Admiral line. The **RUTH ALEXANDER** will go to the Pacific in the near future and will go into regular passenger and freight service between Seattle and Los Angeles, alternating with the liner **PRESIDENT**. Accommodations for first-class passengers will be increased to 300. With her speed of 15 knots, it is expected that the addition to the coastwise fleet will be popular with the traveling public. Special arrangements will be made for transporting automobiles which are carried in large numbers between Puget sound and California. Mr. Alexander has also made a bid for the fast steamer **NORTHERN PACIFIC** until recently in transport service. If the **NORTHERN PACIFIC** is acquired, she will also be used between Seattle and California.

The 1922 convention of the Atlantic Deeper Waterways association will be held in Portland, Me.

Shipbuilding To Pick Up in 1922

Private Interests Planning To Let New Contracts—Coastwise Trade and Passenger Service Offer Best Outlets

BY V. G. IDEN

DURING the fiscal year ending June 30, 1922, American shipyards will build approximately 700,000 gross tons of deep-sea shipping, which is three times as great as the tonnage of merchant ships these yards turned out prior to the war. About one-half of this tonnage will be built during the first six months of 1922. But what comes after these 700,000 tons? That is a question which has been puzzling many a shipyard manager and is still somewhat of a puzzle despite the promise of the federal administration to advocate a subsidy for the American merchant marine.

The stoppage of construction for account of the Emergency Fleet Corporation has left the distorted mental reactions of a headache after a spree and now the proposed naval holiday is causing shipbuilders more concern. But with all these dark clouds in the sky, the shipbuilding outlook for 1922 is not entirely without its brighter tint. On the Atlantic coast alone, preparations are now being made to ask American shipyards to bid on some \$25,000,000 worth of shipbuilding. This amount of work at least will be let during the next year and a half, and this work does not contain a ton for use in what is popularly called the overseas trades. Shipbuilding for the overseas trade is dependent largely upon the national legislation framed in Washington during the next year.

Ships Need Repairs

If congress makes it possible for the American merchant marine to compete on even terms with foreign shipping, much reconditioning of the existing freight fleet must be undertaken. Probably many of the present ships will be reconditioned and in numerous cases diesel engines installed, but there will be no necessity for building tramp steamers for the deep-sea trades for many years to come. The case of passenger vessels is entirely different and anything along this line might arise. Passenger vessels must be considered separately.

First take overseas shipping. In 1914, the world possessed about 12,000,000 gross tons less than is afloat now. The smaller amount could not be remuneratively employed then. Today the international trade of the world can-

U. S. Shipbuilding Record

Year	Gross tons
1912	119,181
1913	205,675
1914	195,611
1915	127,597
1916	232,464
1917	431,304
1918	962,547
1919	2,540,075
1920	3,279,852
1921	2,000,994
*1922	700,000

*Estimated.

not be compared with that of 1914. The war has left too many artificial restrictions to trade to permit a full use of the merchant tonnage of the world. And there are millions fewer people exporting and importing, with a much larger quantity of cargo boat tonnage than ever before at their disposal. That is why owners are found to be willing to accept as little as \$35 a ton for their ships. The movement of the shipping board to sell its wooden vessels to ship-breakers is warranted by economic facts.

In this 12,000,000 tons or more of surplus merchant shipping which the world today owns, a great many vessels will never again put to sea. It includes the wooden ships of the shipping board which are scheduled for the scrap heap. It includes many vessels of which private owners must dispose in some way. Sir Frederick Lewis, at the annual meeting of Furness, Withy & Co., Ltd., stated that there were in existence on June 30, 1921, no less than 5,757,175 gross tons of ships which were over 25 years of age. In addition, he said, of course there are many vessels afloat today which, on account of the heavy cost repairs, will never go to sea again. Take the case of the POCAHONTAS, the passenger vessel operated by the United States lines which was recently abandoned at Gibraltar, after the government had spent considerable sums for her reconditioning.

Short of Liners

But passenger tonnage offers a special outlet. The world is confessedly short of passenger ships. Lloyd's records that during 1913-14 the world owned 857 ships which possessed a speed of from 15 to 25 knots. Today the world owns but 692 vessels of similar speeds. This may include some cargo tonnage but as a general rule,

passenger ships can be distinguished by their greater speed. Therefore, it can be readily seen that the world today is trying to get along with a passenger accommodation at least 20 per cent less than it was during the prewar days. When it is remembered that the new passenger vessels built to take the place of those sunk by German submarines are smaller, that no longer is the large passenger vessel considered profitable, then this smaller number of ships is more significant. It would appear to be true, therefore, that the passenger accommodations offered overseas travelers are at least 25 per cent less than before the war.

Someone is going to build the passenger ships to make up this deficit. Private American lines may not wish to undertake it because of the hampering laws of this country. The Emergency Fleet corporation will not do it because congress and the country are not in the humor to appropriate any more for shipbuilding. Therefore, unless congress enacts proper guarantees to American merchant lines, it would seem probable that foreign shipyards will build sufficient passenger tonnage to recoup the shortage in accommodations.

Building Is Suspended

It is requisite to throw overboard many of the fallacies regarding shipping possibilities before getting down to a normal view point. The latest Lloyd's register of shipping estimates that the world was building 1475 vessels of 5,542,978 gross tons. This has been materially decreased since building on many of the remaining vessels has been suspended. At that time, the United States was building 69 ships of 433,962 gross tons, which was an amount in excess of that building in either Italy, France or Holland. But in the United Kingdom, 700 ships of 3,282,972 gross tons were being built.

During the height of the war shipbuilding emergency, that is, the spring of 1919, the United States had 223 shipbuilding yards with 1122 ways. But this included Hog Island and other yards which were intended merely for the emergency. Before the United States entered the war and before the government had a building program this country had, in the spring of 1917, a total of 130 yards with 398 ways. If

the present building program were scattered among the yards, one way out of every ten would be occupied. But shipbuilding facilities have been materially decreased since 1919 and the industry is rapidly getting back to normal. The shipbuilding facilities in 1917, with its 398 ways was abnormal, as, at that time all the world was striving to have merchant ships built in the United States, far removed from the seat of war in Europe. Prior to 1914, when the war occurred in Europe, this country had but 19 major steel shipbuilding yards, and this 19 more accurately represents normalcy in the United States.

Exchange Rates Improving

Were normal exchange possible, the yards of the United States might have been able to obtain orders from abroad, but so long as the dollar sells at a premium abroad such orders are impossible to obtain. On the other hand, of the 3,000,000 tons of shipping which are recorded as building in the yards of the United Kingdom today, 992,869 tons are being built for foreign account. France, Holland and Norway are the largest foreign customers of the British yards, and even three ships of 24,400 gross tons were on order for interests in the United States. Obviously English yards were able to obtain the bulk of these orders because they were in a condition to take them and because the exchange rate against England made it much more economical to buy from those yards than to buy from yards in the United States.

This is a condition which, according to good indications, will right itself in the not distant future. The foreign exchanges took their lowest records during the past year. Considerable improvement has been made recently and much of the improvement in exchange is of a permanent character. With exchange normal, American yards should have an opportunity of capturing some contracts from abroad for specialized vessels, that being the class of ship construction alone which will be favored in the immediate future. Furthermore, the American yards have been getting themselves in order for this return of business. The adoption of the piece work system is but one of the many expédients adopted to bring about a lower cost factor.

While American shipyards have only hollow promises from the overseas trades, the coastwise services offer an entirely different outlook. On the one hand, the American line announced more than a year ago that it would build two and probably four large passenger vessels in American yards, but to date those contracts

have not been let. The recorded attitude of the government toward the merchant marine furnishes the answer. But the government is already on record as favoring the protection of coastwise shipping and it is natural, therefore, that today the main promise in shipbuilding is found in that branch of the trade.

American coastwise shipping interests will contract probably for \$20,000,000 worth of new ocean going steamships within the next year and a half, according to Theodore E. Ferris. Mr. Ferris holds a front position among American naval architects holding the honor of designing more ocean going tonnage under the American flag than probably any other living man in this country. It was Mr. Ferris who accomplished a great part of the ship designing for the shipping board when this country started into a scheme of intensive shipbuilding, and he created the division of ship design and construction for the shipping board when the Emergency Fleet corporation was organized. Mr. Ferris has designed the majority of the vessels of those large American coasting fleets such as the Atlantic Gulf & West Indies Steamship Co., and similar large Atlantic organizations.

"Within the next year and a half," said Mr. Ferris to a MARINE REVIEW representative "I foresee the building in American yards of anywhere from 6 to 12 new ships for our West Indies and our coasting fleets, and these ships will represent a total outlay of between \$8,000,000 and \$20,000,000. Probably a conservative estimate would be in the neighborhood of \$15,000,000 although it is possible that the total construction during this period may not represent any greater outlay than \$6,000,000."

Indicates Deficiencies

Mr. Ferris holds the opinion that the great need of the ocean going fleets is not cargo boats as the construction program into which the country was thrown by the recent war has left a superabundance of that type of ship. But he pointed out that the American fleets are deficient in passenger and combination passenger and freight boats.

"When the coastwise laws are extended to include the Philippines, and I understand it to be the intention of the federal administration in Washington to take that step next month," continued Mr. Ferris, "there will be created another field for this special type of ship and obviously we do not now possess sufficient boats of this class to meet those needs."

In these trades Mr. Ferris is reckoning only the intentions of private steamship lines. Among conservative

maritime authorities, it is figured that subsidy or other political maritime aid plans are too indefinite and uncertain to have tangible value in any present day review of the shipbuilding outlook. Construction for private account is the only type of shipbuilding for which the American yard can hope at the present moment. Even though a naval holiday saves the government tremendously through the cessation of battleship construction, no dependence is placed upon congress appropriating government money to aid in building more ships.

Want Philippine Trade

Daniel Cox, of the firm of Cox & Stevens, the naval architect who has been acting as the technical advisors to the shipping board during the international disarmament conference, declared that everything is being held in abeyance pending the decision of the government on subsidy. He pointed out that at the present moment all thought is toward the passenger ship and efforts are being made to work out some practical means whereby more ships of this type can be put under the American flag. Mr. Cox looks at this problem, naturally, from the broad point of view of the requirements of a well balanced merchant marine.

"The extension of the coastwise laws to include Hawaii and the Philippines will assist materially," declared Mr. Cox. "It is no longer any secret that the 535-foot liners are losing money and it would be a help to find some berth for these ships of the government where they can make some money. I anticipate that many of these ships, which are now unprofitable in other waters, will be diverted to the Pacific when the coastwise laws are extended and they will furnish the nucleus of a powerful transpacific marine under the American flag."

What are the actual facts supporting the naval architects in these generalities? It is well known that among the \$20,000,000 worth of new contracts to come out are included the two passenger boats which the Red D line intends to build. These boats have been under discussion for more than a year and once already the shipyards have been requested to submit bids. After a careful study of these bids, the line, it is learned, has determined to make certain modifications in the original plans. New plans are now being drawn and requests will go to the shipyards again this year from the Red D line for bids on the two passenger boats proposed under the modified plans.

It is also understood that the Clyde

line, which has held a premier position in the New York-Florida trade, has found it essential to build some new and more luxurious steamers if it hopes to hold that position against the rivalry which is growing up on the part of other coastwise services. According to the present plans, the Clyde line will build two express passenger steamers. These are to be designed for a de luxe service between New York and Jacksonville without stop. Plans are reputed to be now under way.

The Munson Steamship line is also ready to approach the market for some new passenger steamers. At least it is said to be the intention of this line to have one more new vessel. When the Munson line let a contract for the *MUNARGO*, the ship which is just now going into service, it was desired to have a sister ship built at the same time, but the cost of construction at that time altered the plans. Now the Munson line intends to make Nassau a port of call on its Cuban services and, therefore, is anticipating an increased demand for reservations. To accommodate this demand, the Munson line sought to have the *WALTER D. MUNSON* reconditioned from a freighter to a passenger vessel. The shipbuilders declared it would take four months within which to do the work. The line figured that within four months the Nassau-Cuba season would have passed, and concluded it best to wait until 1922 before doing anything more to enlarge the service.

The Porto Rico line, it is understood, will have considerable reconditioning done. This company will un-

doubtedly convert several more of its steamers to oil-burners. The plans of the Ward line are also to be accounted for. While nothing definite has as yet been learned as regards these, it is generally understood that the Ward line will not be left behind by its rivals in the matter of offering modern accommodations to the traveling public. The inauguration of a New York-San Francisco passenger service by the Pacific Mail Steamship Co. has in a measure crystallized the sentiment of the coastwise steamship companies. Some of the equipment of most of these lines is antiquated and is confessedly a makeshift designed to carry them over a period of high costs of construction, so that any new element of competition jeopardizes their position.

According to advices from Bangor, Me., interests at Eastport are forming a stock company, which plans to engage in the coastwise freight business with a fleet of half a dozen auxiliary schooners to run between Boston, Portland and Eastport, stopping at various intermediate ports. The boats will be built in the Pushee yards at Dennysville, Me., and it is reported that keels for the first two ships, which will be of small tonnage, have already been laid. A number of such small companies are now in the process of organization and with the gradual return to normal, construction for the account of such services may be expected to increase.

If to the known deep sea business that is coming out during the forthcoming year is added the construction work which the American yards

will do for the inland waterways services, the sum total of all shipbuilding in the United States will bulk large. The Philadelphia & Camden Ferry Co. has awarded a contract to the Sun Shipbuilding Co. for two new all-steel ferry boats for the Philadelphia-Camden service. This ferry company is owned by the Pennsylvania railroad. A number of new ferry boats are under construction for service in the harbor of New York and several more will be built. Furthermore, the Atlantic coast cities have been showing an increasing interest in awarding contracts for fire and patrol boats.

Cox & Stevens are said to be drawing the plans for two new yachts for private account. One of these will be a boat of 200 feet or more in length.

Other than the original plans for the two Red D passenger boats specifications for none of the other work mentioned here have as yet been filed with the American Bureau of Shipping. Therefore, all of these schedules are for work in the future. The Red D boat plans were the only deep sea ship construction proposed to the bureau during 1921. In this respect, the year 1921 represented the lowest point of the shipbuilding depression. Recently the American Bureau of Shipping has been called upon to approve the plans for two tugs, one derrick barge and 20 steel barges for inland waters. Contracts for building these crafts have been let to the Dravo Contracting Co., Pittsburgh; Marietta Mfg. Co., Pt. Pleasant, W. Va., and the American Bridge Co., Pittsburgh.

Contract for Big Addition to Drydock

TO CARE for increasing business, Todd Dry Docks, Inc., Seattle, has awarded a contract for the construction of a fifth pontoon for the immense floating drydock which forms one of the units of the Seattle plant. The completion of the additional pontoon will give Todd Dry Docks the largest floating drydock on the north Pacific. This yard also has two smaller docks. The new unit will be built by J. C. Johnson, Port Blakely, Wash., at a cost of about \$175,000. The present 4-unit, 12,000-ton dock was found inadequate as to length for handling the 535-foot express liners of the shipping board now operating to the Orient. The addition will afford a total length of drydock floor space of 250 feet, amply sufficient to lift the largest ships entering Seattle without possibility of dangerous overhang. It is expected

to have the fifth unit in operation in March.

North Pacific shipbuilders who have large claims pending before the shipping board are encouraged at the recent settlement made with J. F. Duthie & Co., Seattle. While the specific amount awarded the Duthie corporation was not made public it is known to exceed \$1,000,000. The settlement was for claims on 24 steel steamships, each of 8000 tons, built for the government during the war. The ships were ordered on the flat contract basis but the Duthie claims were for extras after work was begun.

The Burrard Dry Dock Co. has been awarded the contract for a floating drydock to be built at Vancouver, B. C., with government assistance. The contractor, it is stated, is to receive as compensation 4 per cent on \$2,500,000 for

35 years or approximately \$112,000 per annum.

Mortgage of \$4,421,000, the largest ever originating at Portland, Ore., has been filed in that city by the Old Colony Trust Co. against seven tank steamers built at Portland for the Swiftsure Oil Transport, Inc. This mortgage is independent of one for \$13,000,000 indorsed at Portland previously, by the shipping board against the oil company. The seven tankers against which the mortgage was filed were built by the Northwest Bridge & Iron Co. Six have left Portland but the seventh, the *SWIFTLIGHT*, is still idle on the Willamette river.

The British Columbia Coast Steamship Service, subsidiary of the Canadian Pacific, has accepted the new steamer *PRINCESS LOUISE* built at Vancouver, B.

C., by the Wallace Shipbuilding & Dry Dock Co., Ltd. The new liner averaged 17½ knots on her trials. She will be used between Vancouver and Seattle.

Property of the Norway-Pacific Construction & Drydock Co., Everett, Wash., has been sold at sheriff's sale and was purchased by two Everett firms for \$28,543, the total of their claims. The date of the sale of the company's personal property has not yet been set. This yard was completed after the armistice was signed and it has never done actual construction work because of financial difficulties.

The United States scout cruiser OMAHA has been returned to the plant of the Todd Drydock & Construction Corp. Tacoma, Wash., after having been docked at the Puget sound navy yard. While in drydock, the cruiser had propellers installed, rudder hung and other work done. She is now being completed at Tacoma where her sister vessels, the MILWAUKEE and CINCINNATI are also under construction. The three vessels will be delivered during 1922.

The Pennsylvania Shipbuilding Co., near Portland, Oreg., with all its equipment intact as it was left at the conclusion of war time building for the Emergency fleet, has been purchased by G. F. Matthews, pioneer Pacific coast wood shipbuilder. The Peninsula Construction Co. is the name of the new company formed to operate the yard. Mr. Matthews intends to specialize in the construction of wood coastwise vessels probably to be equipped with diesel engines which he believes will be a popular type in the near future. Mr. Matthews for many years operated a construction plant at Hoquiam, Wash.

During a recent visit to Puget sound William H. Todd, president of the Todd Shipyards Corp., refused to deny or affirm a rumor coming from San Francisco that the Todd Drydock & Construction Corp. would be purchased by Charles M. Schwab or interests represented by the latter. "The Tacoma plant is in as good condition, I think better, than any of our other plants in the country," Mr. Todd added. Mr. Todd stated that following the Washington conference he expects foreign markets to open up and business generally to revive.

World Shipbuilding Still Shows Decline

Total shipbuilding throughout the world on Dec. 31 shows a decline of more than a million tons gross compared with Oct. 31. Of this loss, the British share represents about 640,000 tons, the American about 215,000 tons, and that of the other countries combined about 225,000 tons. The total for the United States, however,

is now only half what it was three months ago, while the British decline is only about a fifth, and that of other countries only about a tenth from the total of the preceding quarter, according to Lloyd's register.

The decline during the past three months is shown by the following table, giving in gross tons the aggregate of construction work:

	Jan. 1	Oct. 1
United States	216,428	433,962
United Kingdom	2,640,319	3,282,972
Other countries	1,600,346	1,826,044
World totals	4,457,093	5,542,978

These world construction figures do not show the full extent of the contraction in shipbuilding, as work has been ordered suspended on more than 1,100,000 gross tons, of which more than 700,000 tons represents work in British shipyards. The actual status, therefore, is as follows, in gross tons:

	Great Britain	World
Work contracted	2,640,319	4,457,093
Less suspensions.....	722,000	1,122,000
Actual total	1,918,319	3,335,093

While the total of world construction has not yet fallen to the prewar figure, it is rapidly approaching it. In comparison with the present aggregate of actual work in progress, of 3,335,000 gross tons, the total under way on June 30, 1914, was 2,946,000 tons. The present British total of 1,918,000 tons compares with 1,747,000 tons in 1914, and the American aggregate of 216,000 tons with 148,000 tons. The present total for the United States contrasts with 4,186,000 gross tons for the first quarter of 1919, when this country was building more than all the rest of the world combined. The United Kingdom now holds that position, with about 60 per cent of the aggregate building throughout the world.

Returns from all countries of construction which is being done under the supervision of Lloyd's register and intended to be classed with that society, show an aggregate of 2,980,937 tons, of which 2,091,356 tons are in the United Kingdom.

Further decreases are reported in the construction of tankers, the world total at the beginning of the year being 793,000 tons, as compared with 931,000 tons in the preceding quarter. During this period the aggregate of oil-carriers building in the United States dropped back from 222,000 tons to 103,000, while in other countries, excluding Great Britain, the decline shown was from 182,000 tons to 153,000. A slight advance was shown in the total of the work under way in the United Kingdom, the present total being 536,000 tons, compared with 527,000 in the preceding quarter.

The great scarcity of new work is evidenced by the returns showing that during the past quarter work was begun on only 54,000 gross tons of vessels, while in the same period hulls representing 466,000 tons were launched. In the last quar-

ter of 1920, work was begun on 503,000 tons, while 576,000 tons were launched.

Excluding Germany, which probably ranks second, the greatest volume of shipbuilding in any country outside the United Kingdom is being done in Italy, followed closely by France, Holland and the United States. Japan is now building only 145,000 tons. Construction has also fallen off sharply in the British dominions. How work in a number of the countries compares with a year ago is shown in the following table:

	Jan. 1, 1922	Jan. 1, 1921
Italy	393,832	363,000
France	352,635	397,000
Holland	313,879	450,000
British Dominions	66,469	186,000

The 3,335,000 tons actually under construction in the world today compares with the peak of 8,048,000 tons attained in September, 1919, or a loss of 4,700,000, or nearly 60 per cent.

Receivers Are Named for Globe Shipyard

An order appointing former Gov. Phillips Lee Goldsborough, of Maryland, Bernard A. Brennan, John A. Spilman and Walter F. Peterson, all of Baltimore, receivers for the Globe Shipbuilding & Drydock Co., was signed recently by the circuit court.

The receivers were directed to complete repairs on vessels under contract and to that end operate the plant.

Corrected estimates placed the company's indebtedness at about \$2,300,000 and its assets at \$4,214,000, including the cost of its plant. The Globe company moved to Baltimore from Superior, Wis., in 1920. From 1917 to 1920 it completed and delivered ocean going vessels at Superior without any government financial assistance.

At Baltimore, the corporation secured a site at Fairfield and erected a plant, the most important feature of which was a big floating drydock with a lifting capacity of 9000 tons. For 18 months, the plant provided work for about 1000 men. The present force is about 400. The company has built tankers for English owners and converted several Hog Island vessels into tankers. The receivership proceedings followed a meeting of the stockholders which had been called for the purpose of voting upon a new financial plan which was expected to enable the company to liquidate its indebtedness and to provide ample working capital. The plan failed of adoption, it is understood, because the Wisconsin interests, who own 27 per cent of the preferred stock, refused to vote their holdings. The new financial plan provided that if 75 per cent of the preferred stockholders assented to the terms, they would be binding upon all stockholders.

Late Decisions in Maritime Law

Legal Tips for Ship Owners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

SHIPPING articles are mercantile documents, and are entitled to a liberal construction in order to accomplish the purpose the parties had in mind; nevertheless, under United States revised statutes, section 4511, the articles a seaman is asked to sign should tell him in general terms, at least, what kind of a voyage the master is then planning to undertake, reserving on their face, if need be, sufficient latitude for the changes which may subsequently arise from the exigencies of a successful participation in the world's carrying trade.—United States v. Westwood, 266 *Federal Reporter* 696.

There is no obligation of duty on the part of the owner of a private wharf to give notice of an existing danger to vessels which may make use of the wharf, although not invited by the owner to do so; a duty rests on the uninvited user to make inquiry.—McAvoy v. Camden Shipbuilding Co., 266 *Federal Reporter* 710.

A charterer or consignee, it was held in the case of HANS MAERSK 266 *Federal Reporter* 806, if the bill of lading incorporates the demurrage clause, is bound by its agreement that a vessel shall be loaded or discharged within a given time, notwithstanding that the shipowner does the loading and discharging. The term "default," in the covenant to pay demurrage from day to day for every day's detention thereafter, does not mean that he is only liable to pay for delay due to his own fault, but means delay due to his failure to perform his covenant that the vessel shall be loaded or discharged in the time agreed upon. He takes the risk of all causes of delay, except those due to the fault of the shipowner and to *vis major*.

The abandonment of a valuable steamer and cargo when they were not past saving is an error in the navigation and management of the vessel, for which the owners are not liable under the Harter act, if they exercised due diligence to make her seaworthy.—THESSALONIKI, 267 *Federal Reporter* 67. The same case also holds that a steamship company is not an insurer as to passengers, but only liable for ordinary care; that is, care according to the circumstances. As to cargo and passengers' baggage, it is an insurer; but, if the loss is brought within an exception of the bill of lading or of the passenger ticket, proof that the carrier

was guilty of negligence lies upon the shipper or consignee and the passenger.

It is well settled, said the court in the case of CONISCLIFFE, 266 *Federal Reporter* 959, that while a vessel is liable for the cure and maintenance of a sailor who is taken ill while serving the vessel, she is not liable for such maintenance and cure when the disease was contracted from the indulgence by the sailor in case of gross indiscretion, or indulging his own vices. A vessel which was required by the government to pay for the treatment of a sailor who had thus contracted a disease while on shore was entitled to offset such payment against wages due him.

Where two tugs were under the same management, the same control, and went for a joint operation to effect the same result, they must be looked upon as conducting one salvage operation and the success of one of them after the other was disabled must be to a certain extent at least credited to the other.—APALACHE, 266 *Federal Reporter* 923. The same case decided that a salvage award of \$10,000 should be distributed 80 per cent to the owners of the tugs and 20 per cent to the crews of the two tugs, in proportion of the monthly wage of each member of the crew.

While it is true that under ordinary circumstances it is not negligent for a vessel to extend into the channel beyond the end of the pier, unless it prevents or obstructs navigation, or other circumstances make the position dangerous, it was held in the case of HERM, 267 *Federal Reporter* 373, that a master of a vessel who knew that ice conditions in a harbor had caused his vessel and many others to drag, and who, without any emergency to require it, left a safe anchorage and moored at a dock, with his vessel extending 35 or 40 feet into the fairway, seeing three anchored barges a short distance away, unable to control themselves by their own power, and all liable to be dragged helplessly upon him, was guilty of negligent seamanship.

Where coal was furnished in the usual way to a tug, under the act of June 23, 1910, c. 373, 36 Stat. 604, a lien was created against the boat which could be enforced, unless the person supplying the necessities had knowledge that he was dealing with a charterer or an agreed purchaser in possession. In such case, it was held

in the case of CASTOR, 267 *Federal Reporter* 608, he is put upon inquiry as to the terms of the charter or contract.

No recovery can be had by a passenger on a wrecked steamship for any articles which are not included within necessary baggage and effects which a traveler may be expected to carry with him, nor will a steamship company be liable for large sums of money, exceeding in amount that which under all the circumstances, a wayfarer may be expected to take with him, or for merchandise not intended for personal use.—VIRGINIA, 266 *Federal Reporter* 437.

"When an accident happens within the confines of a nation's jurisdiction, the laws of that nation apply and will be administered by its courts. When a vessel sails away from that port, and reaches the port of a third nation, the courts of this third nation can not substitute its own law for the establishment of the rights of the parties, which have already been fixed. It can only apply the laws of the country where the accident happened. Nor would compensation laws of the country owning the vessel defeat the general maritime law, which establishes a liability for tort against the vessel, if that is given by the law of the place where the negligence occurred."—HANNA NIELSEN, 267 *Federal Reporter* 729.

Under act of June 23, 1910, section 1, giving a lien to any person furnishing repairs, supplies, or other necessities, including the use of drydock or marine railway, to a vessel, a maritime lien enforceable by suit *in rem*, naval architects employed by the owners of lake steamers to furnish plans and specifications for their alteration, so as to fit them for ocean navigation and to superintend the making of such alterations, did not have a lien, nor did the contractor for the reconstruction of the vessels.—SUSQUEHANA, 267 *Federal Reporter* 811.

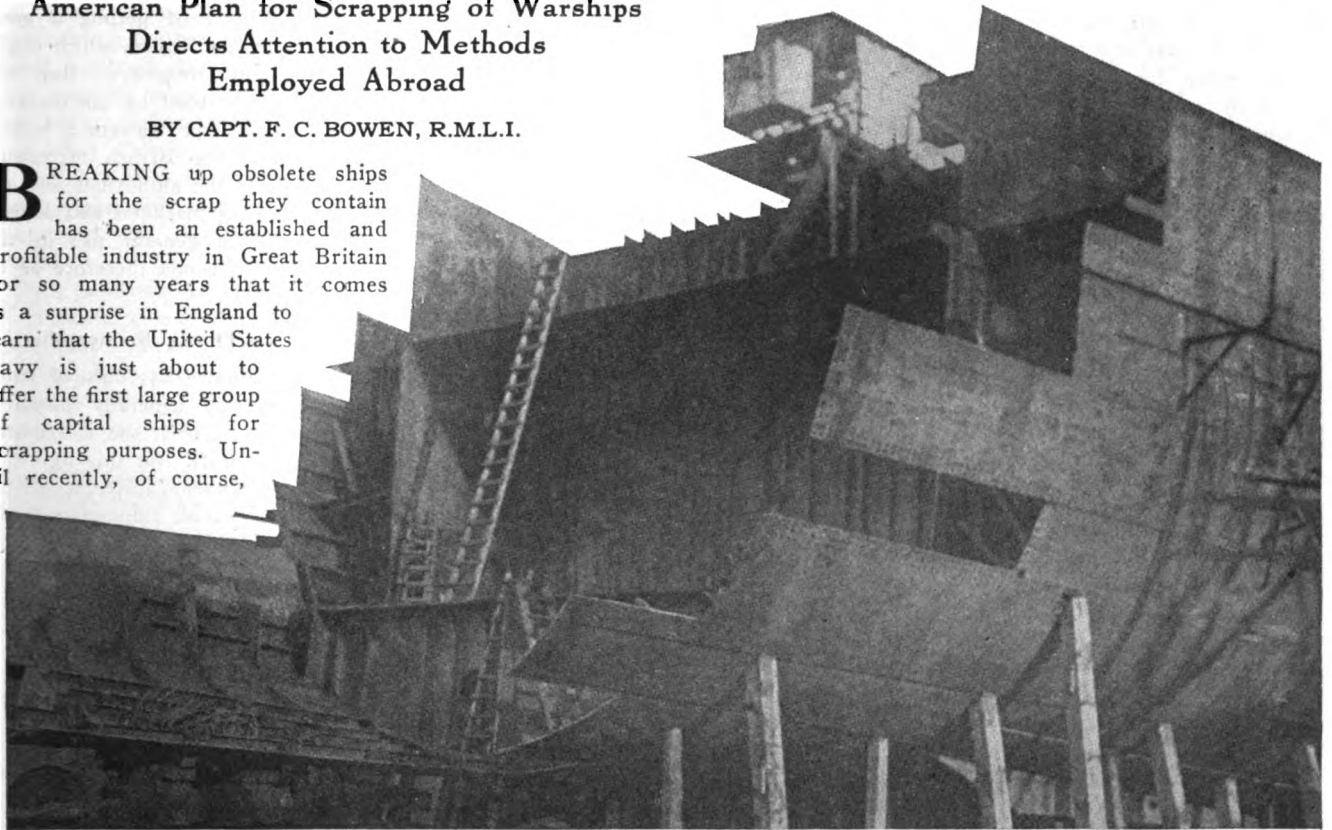
Where work of salving a lumber cargo was onerous in the extreme, the men having to work in water most of the time, and continued over a considerable time, with a number of vessels and their crews engaged, the position of the wrecked schooner being an exposed one, adding to the difficulties of the work of the men engaged in salving the cargo, an award of 75 per cent of the net proceeds of the salvaged property was proper.—BULLARD v. 230,263 Feet of Lumber, 267 *Federal Reporter* 860.

Shipbreaking, as Done in Britain

American Plan for Scrapping of Warships
Directs Attention to Methods
Employed Abroad

BY CAPT. F. C. BOWEN, R.M.L.I.

BREAKING up obsolete ships for the scrap they contain has been an established and profitable industry in Great Britain for so many years that it comes as a surprise in England to learn that the United States navy is just about to offer the first large group of capital ships for scrapping purposes. Until recently, of course,



An incomplete destroyer being broken up while still on launching ways

there has been an essential difference in the conditions prevailing on the two sides of the Atlantic. For instance, while the Americans still burn some of their old wooden ships in order to pick up the fastenings with a minimum of trouble, British firms are willing to pay a good price for such vessels, and after laboriously breaking them up by manual labor have no difficulty in getting about \$8 a ton for their timbers as fuel for open fireplaces and in woodburning operations.

Similarly, Britain long ago was forced into the necessity to which the law of supply and demand is driving the United States today—of carefully utilizing all metal contained in the fabric of both war and merchant ships for which there is no further use.

One or two British shipbreaking companies have specialized in this particular line for many years and in vigorous competition with the Dutch and Italians, and to a lesser degree with the Germans,

have developed their plants and methods to a high point of efficiency. They have found the industry to be one which on the whole yields gratifying profits.

After the armistice a large number of small firms also sprang up all around the British coast and started to work on the surplus ships of the royal navy. Many of these little establishments were operated by former officers and others without any experience in the business and with only the haziest ideas

British Industry Described by an Authority

PROPOSALS made by officials of the United States navy to representatives of some of the largest steel companies in the country for the establishment of a shipbreaking industry to work in conjunction with a program for the scrapping of immense tonnages of warships have aroused considerable interest as to how the industry of this character is carried on in Great Britain.

The naval officials have pointed to the British industry as a pattern, which at least may be found to offer valuable suggestions for a similar line of work in America. In Great Britain shipbreaking has been developed to a high point of efficiency and profit, the industry has been established so long and so

thoroughly that the mere announcement that the United States may adopt the plan in connection with the project for disarmament occasioned considerable surprise.

The accompanying article describing the British industry was specially written for MARINE REVIEW by an authority on the subject, who has access to the best information. Needs of location, equipment, and the practice are made clear, and several essential requirements are emphasized. Natural advantages which Americans possess over the British shipbreakers are pointed out. In a word, a clear insight is given into this important subject, on which heretofore few details have been available.

of the best way to set about it. Even so, many of them made a lot of money out of their venture, though probably more of them lost all their capital.

When one considers the prices which were paid for the ships in the first days after the war, and the extraordinary methods which frequently were adopted to break them up, it is a wonder that any of them found the balance on the right side. But the price of old men-of-war

all the guns and gun-mountings are taken out and landed on the quay. Whether this is in case they may be wanted for future hostilities or whether it is to prevent any unauthorized person getting the opportunity of learning English gunnery methods is a little uncertain. If the former, an indefinite period of exposure to the elements does not do the ordnance any good, as several engagements by armed merchant steamers dur-

instruments of all descriptions. Formerly it was also the custom to wreck the propelling machinery beyond all hope of its ever being used again, but this is now seldom done and the purchasers have thus an opportunity of getting a good price for engines and boilers which might prove useful in freighters. But the vendors are handicapped by the disfavor with which navy type watertube boilers are regarded in the British mercantile marine. Naturally the authorities also remove sundry minor machines and fittings which are still in general use in the service and which would therefore be of use as spare parts.

About Two-Thirds Recoverable

When the admiralty has finished stripping her, the ship generally displaces about two-thirds of what she is credited with on normal draft. But this figure, it must be remembered, includes a big weight of stores, coal, ammunition, ballast and the like. In other words the tonnage of old material recoverable from the hulk is about two-thirds the rated displacement of the ship when in commission. In this light condition the ship

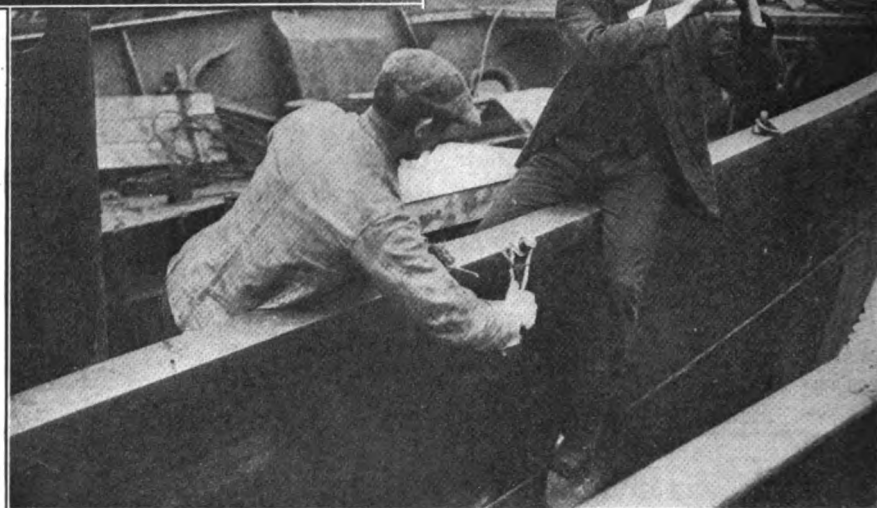


has gone down, and experience has brought wisdom. Therefore, there is plenty of British precedent upon which the American ship breaker starting business may base his operations, and from the accounts which reach England he has many factors in his favor.

The Ships Are Stripped

In England every type of man-of-war has been put on the sale list. Early ironclads after many years of useful service as training ships have at last been discarded in favor of shore establishments. They have gone to swell the huge list of fighting ships whose years of war service have worn them out to such an extent that it was decided they were useless for the navy, and therefore far better disposed of while the world was still in need of steel of every kind. The list of war vessels already broken up in England starts with dreadnought battleships and cruisers and goes through every type down to many scores of destroyers and submarines, a large proportion of which were only built during the war and would have been considered a great acquisition by some navies.

When the British admiralty sells ships for breaking up it does not deliver them just as they lie in the dockyards, however old their fittings may be. To begin with



THE OLD METHOD OF REMOVING RIVETS TO WHICH UNION LABOR IN ENGLAND CLINGS TENACIOUSLY, AND THE MODERN METHOD WHICH SAVES CONSIDERABLE WORK

ing the war proved beyond a shadow of doubt.

If better methods of storing are not and cannot be made available it is generally felt that this heavy weight of metal might just as well go to the scrappers with the rest of the ship, but up to now this view has not found favor in official circles.

All the fittings of the control and firing stations are removed with the greatest care, as are also the navigating

requires skillful handling and has to be towed with the greatest care, a big armored ship requiring the services of three or four tugs at least. Insurance underwriters have been faced with a long list of obsolete warships of all nations which have come to grief on their way to be broken up, and are not enthusiastic about these risks. But on the other hand there are several companies which by care and skill have brought scores of such tows safely to their destinations

without a single mishap. Again, the small draft is of the greatest advantage to the shipbreakers, as will soon be shown.

The proportions of each material which are recoverable naturally vary enormously according to the age and type of the vessel scrapped, but as a rough guide they may be taken as follows: 60 per cent heavy steel scrap; 10 per cent light steel scrap; $7\frac{1}{2}$ per cent brass and copper, in the case of a big ship; $2\frac{1}{2}$ per cent lead; 5 per cent cast iron; and 15 per cent wood, dirt, rubbish, paint and other waste.

Such companies as T. & W. Ward Ltd., of Sheffield, one of the largest and most experienced in the British shipbreaking industry, have gradually extended and re-organized their coastal establishments until they are models of all that such

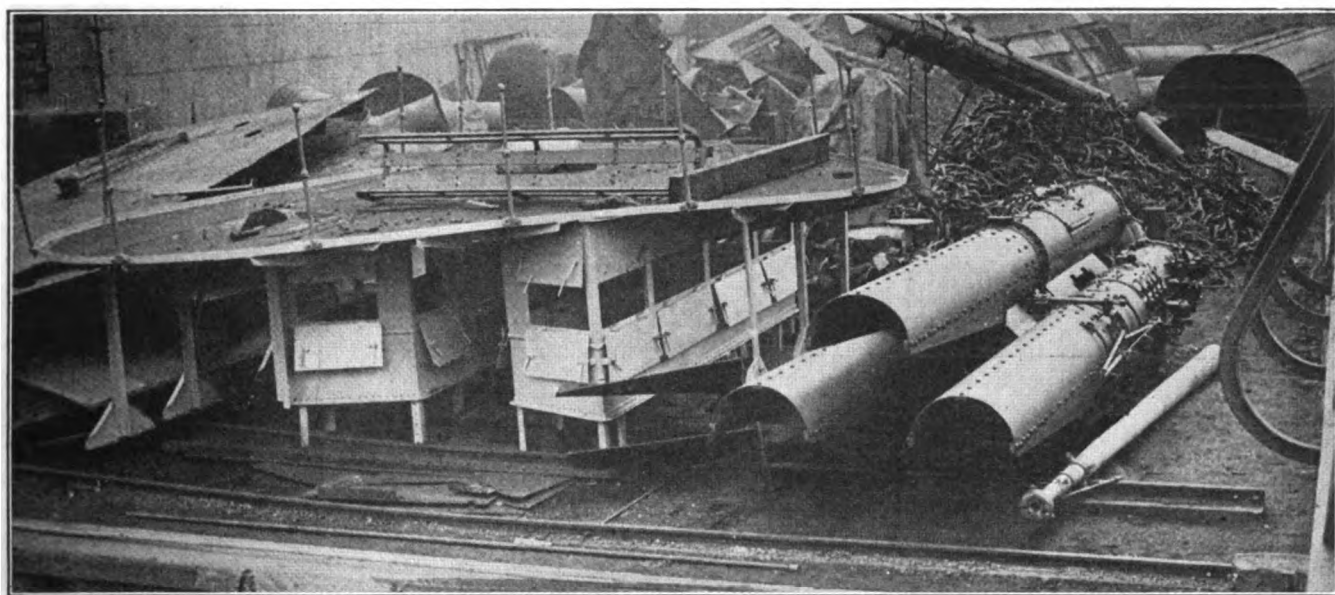
molished, with a depth of water sufficient to float her in on the top of a high tide. In this, of course, the difficulties of the breaker are greatly reduced by the light condition in which the ships are handed over. The rise and fall of tide must be at least 10 feet, and as much more as possible. The bottom is best hard and shelving, and the longer it dries at low water the better. Such sites are to be found along nearly every coast, and it is only a matter of weighing the relative advantages and disadvantages of each individual spot before coming to a decision.

Drydocks Are Disadvantageous

Years ago drydocks were sometimes used in England for shipbreaking, but it is now universally recognized that not

in an efficient and economical manner.

First a quay or wharf may be described as practically essential, for although there is nothing definitely to rule out the use of floating plants as impossible, yet it offers such infinite possibilities of trouble that anybody would be unwise to try the experiment. The strength of this quay depends entirely on the transport facilities of which it is proposed to make use. Where these are imperfect, the use of a wharf strong enough to stand the weight of the machinery and some 500 tons of scrap metal waiting to be dealt with and moved away will permit the work to go on without interruption. On the other hand cruisers and destroyers frequently end their days alongside wooden piers of unstable description. But during the process the ship being broken



GUN-PLATFORMS AND TRIPLE TORPEDO TUBES, REMOVED FROM ALMOST NEW BRITISH DESTROYERS, ON THE DOCK WAITING TO BE SHEARED INTO FURNACE SIZES

yards should be. But although a considerable gain in efficiency is effected thereby, it need not discourage the man who does not possess large capital, for excellent work has been done in small yards of a rough-and-ready description. Indeed, with the idea of relieving the distress caused by the post-war wave of unemployment, the Ward company has been breaking up ships in all sorts of odd corners up and down the coast. Some of the temporary branch yards which they established in the lower reaches of the Thames, for instance, are as different from the well organized establishments at Preston and Morecombe as chalk is from cheese, but controlled by men who know the business they have been run at a satisfactory profit. A big yard is not by any means necessary.

Foreshore Is Advisable

What is required is a foreshore or beach as long as the ship to be de-

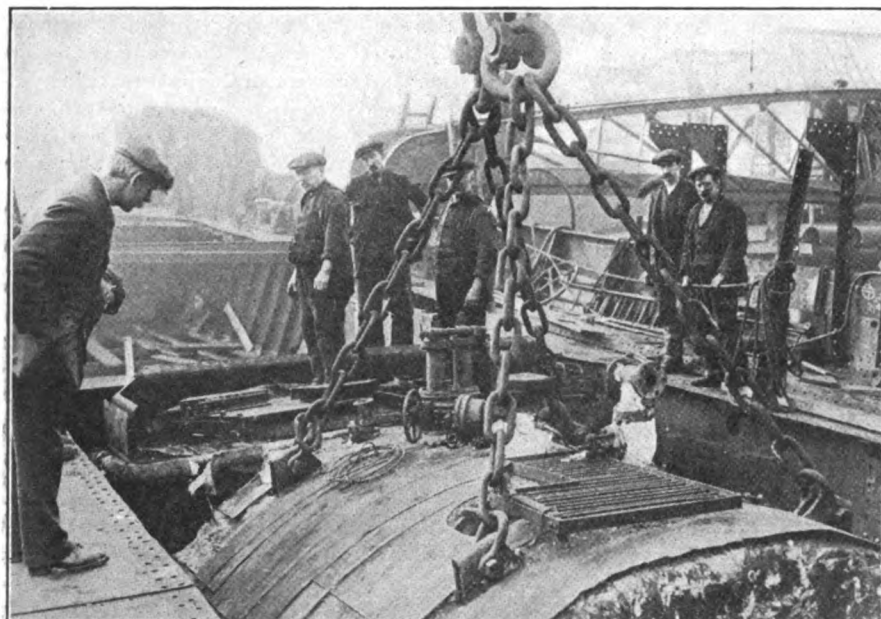
only are they so expensive that no breaker could make a profit from one under present conditions, but they possess considerable disadvantages apart from the question of cost, compared with the open foreshores. This is always provided, of course, that the latter is not exposed to the full force of the waves, when work would frequently be impossible.

As for the plant required for the work, every practical man has his own ideas and sticks to them despite the fact that they frequently are different from those held by his equally successful competitors. Some establish an elaborate plant, others manage excellently on small ones. In making a decision all sorts of factors have to be reckoned with, chief among which are the proposed life of the yard and the physical feature of the site selected. However, one may well take an average small plant which will prove ample for breaking up armored ships such as old battleships and cruisers

up is liable to roll about and hit the wharf continuously and hard, and it is wise to be prepared for this in order to prevent disaster.

Process Hampered by Labor

It is in the matter of mechanical plant that the question of personal taste enters chiefly, but the following may be taken as a fair sample. It must be remembered that Great Britain the ship-breaker is at a great disadvantage with regard to oxyacetylene work. The use of oxyacetylene apparatus in England is restricted under patent licenses and the few firms engaged in this class of work have little competition and plenty to do, with the result that their charges are high. They may have to reduce their quotations later on, but nobody knows when this will be and in the meantime the use of this form of apparatus is restricted by semimonopolistic conditions. Secondly, labor is antagonistic to the



REMOVING A CYLINDRICAL BOILER FROM A GUNBOAT FOR INSTALLATION IN A COASTING STEAMER

general use of the oxygen torch.

It was only a few weeks ago that ship repair work on the river Mersey had to cease entirely owing to the men refusing to handle a new burner requiring two men, unless 23 others were kept on pay standing by to make up the team of 25 which the union considered reasonable for the work performed. It was not until the industry had been dislocated for many weeks and considerable distress had been caused that the men gave way.

When these disadvantages are eliminated it is more than likely that the use of power shears will be much reduced but at the moment the cheapest method in many cases is to employ hand cutting at piecework rates on board the ship, shearing up the big pieces on the wharf. For this latter work a heavy double-jaw plate shearing machine and a lighter one for the thinner plates are usually considered sufficient.

Where Magnets Are Handy

The transport question is one that must be settled locally and with due regard to the conditions prevailing. It is usual to employ barges and coastal steamers whenever the destination of the scrap is approachable by water, but a railway siding is a great advantage. Both ships and cars have to be loaded by cranes, and for this purpose and for getting the large pieces of metal out of the ship and on to the wharf it is usual to provide one traveling crane and one stationary shear leg. Both of these should be fitted with heavy-duty lifting magnets. Submersible magnets permit steel to be brought up through a much greater range of the tide than was formerly possible. As the British salvage

companies are now working with 800-pound submersible magnets which are capable of bringing up 20 tons or so at a time from under water the old disadvantage of weight is negligible. A hard bottom is still of great advantage, but the magnet will grip through a thick layer of soft mud.

For breaking cast iron the old fashioned skull-cracker ball and derrick still is favored and a large tumbling mill of the foundry type will generally be kept busily employed cleaning the thousands of brass and copper fittings which are included in the construction of a modern man-of-war. Lead fittings and miles of electric wiring also require a machine for their efficient salvage.

The size of the oxyacetylene plant depends upon the considerations already mentioned and this with a heavy platform scale and lighting plant completes the equipment of the yard.

It may be made infinitely more elaborate, of course, and on the other hand many firms are content to take rather more time over the job and carry it on without duplicating the cranes and shears, and by contriving economies in various other directions. But the plant described is the one usually considered enough for the efficient handling of an armored ship of 12,000 to 16,000 tons rated displacement.

When disarmament causes numerous superdreadnoughts to find their way to the scrap heap more extensive plant will be necessary, or the work will never be completed. At the beginning of the present century, when the breakers were handling ships protected by anything up to 24 inches of wrought iron, with teak sandwiched in between the plates, explosives were frequently used but they

are now out of favor. Although armor plate in the ships side may be removed by getting at the bolts from the inside, the oxygen torch is the ideal weapon.

Unskilled Labor Used

Shipbreaking has been specially introduced into many British coastal districts lately because of its capacity for giving employment to large numbers of unskilled men. There is scarcely a job attached to it that cannot be learned in well under a week by any man possessed of ordinary intelligence and the desire to do his work in satisfactory fashion. With the rank and file of the workmen the one thing that is asked of them, above all, is to carry out the instructions given to them to the letter. With the higher ratings it is different. Success is unlikely if the managers and foremen are not thoroughly experienced with a complete knowledge of their work from beginning to end. This knowledge is not difficult to attain by any thinking man, but without experience accidents are likely to be frequent and progress slow. During the last three years, however, a number of men have made themselves thoroughly proficient at the work, and with capable men to direct operations, there is as a rule no great difficulty in finding competent foremen.

At present the outlook for the shipbreaking industry in Great Britain is not particularly promising, and the unfavorable part is the certainty that there are almost unlimited foreign markets for the scrap to be had if only prices could be brought lower. Almost every country, from Japan and Germany to the United States, is more or less in the market for melting steel scrap, while Great Britain already has more scrap on her hands than she knows what to do with at present unless the shipbreakers sell at a loss, or the government lends assistance by returning a proportion of the high price which was demanded for warship tonnage up to a few months ago.

Take as an instance the requirements of German steelmakers who are willing to buy large quantities of steel scrap as long as it is at a price which will enable them to sell billets at around £6 (\$25) per ton. T. & W. Ward Ltd., bought their last lot of well over 100 British men-of-war at a flat rate of £2 10s (\$10.50) per ton, which makes it impossible to sell at less than £3 (\$12.60) when they have finished breaking them up. This appears reasonable enough, but when one considers the cost of freight and insurance, the dock charges and import duties, it is difficult to deliver to a foreign works at less than £5 (\$21) per ton.

Soon after this lot of ships was sold to an English firm, however, the admiralty

disposed of others to Dutch concerns at a much lower price. The material in these latter ships is entering Germany in large quantities, for not only is the initial cost much less, but the carriage of the steel straight up the Rhine is comparatively small. Recently the authorities went one better and sold a number of ships to a British firm which is taking them over to be broken up in Germany by German labor under experienced British supervision. All charges, from the purchase price to the import duty, are greatly reduced, but there is the greatest indignation that British men-of-war should end their days in this fashion, particularly among the men who fought in them during the war and among the workmen who see themselves being cut out by the cheapness of German labor. Thus it will be seen that the poor outlook of the shipbreaking industry in England is due purely to local causes which should have no influence on the business in other countries.

In its advertisement, the United States navy department describes two cruisers as being suitable for conversion into merchant ships, which draws attention

to the work which has been done in this direction during and after the war. Some of the interesting examples come from the western side of the Atlantic where the British light cruiser CHARYBDIS was converted during the war and earned for herself the reputation of being the most uncomfortable passenger carrier afloat. But as she practically saved the island of Bermuda from starvation during the acute period of the ship shortage she may be said to have much more than justified her existence. Another conversion was the United States cruiser BOSTON, which became a freighter quite early in the struggle. To show how she compares with a modern freighter the following table is interesting:

	Boston (1884)	Cricket (1913)
Gross tonnage	2557	1136
Net tonnage, for dues, etc.....	1538	773
Deadweight tonnage, earning....	2500	2500
Crew	44	27
Indicated horsepower, coal consumption	1500	950
Speed, knots	10	9 3/4

This comparison shows clearly that the converted man-of-war has not the least chance of competing successfully with an up-to-date cargo steamer unless the demand so far exceeds the supply that

anything which floats will be able to earn profits for her owners no matter how inefficient she may be. The old French cruiser DUPUY DE LOME, which cost many thousands to convert into the cargo steamer PERUVIER, is another case in point, for she failed to complete her maiden voyage to Bahia. She was towed into Pernambuco after something like a dozen breakdowns on her way out, and was then towed all the way home to Antwerp, where she has been laid up many months. In her case, however, it is only fair to say that nearly all the trouble was caused by the machinery and especially by the type of boilers which did not satisfy the merchant firemen.

On the other hand the United States destroyer WORDEN and certain German warships have made a much better showing, but in their case increased capacity was obtained by replacing the old steam engines by diesel machinery. Also they are not engaged in what might be described as cut-throat competition. With as much surplus mercantile tonnage on the market as there is today the best disposition of the obsolete man-of-war undoubtedly is the scrap heap.

Plan To Develop Shipbreaking in U. S.

WHERE do all the old ships go is not as facetious a question as it may appear upon its face. Obviously it is impossible for a ship to disappear through a mere sale. A steamship line may sell off its old steamers as they become antiquated and most of the premier steamship lines do this, but such ships are purchased by smaller concerns and they are continued for a time in operation. The selling and reselling of a ship does not dispose of her; ultimately she must be destroyed and removed from the channels of trade. Disposition of outworn ships is a problem in which the insurance companies are especially concerned, and their concern frequently amounts to as much as that of the owners of the ships.

The manner of disposing of outworn ships has been a question to which Americans have given singularly little thought during the years past but it is now becoming a question of real importance. Some method of disposing of outworn tonnage is essential now that the United States navy will have about 800,000 tons of ships to scrap under the naval holiday agreement.

Ship breaking as an industry has been distinctly developed in England. It is an industry which must be developed in the United States. Breaking up of out-

worn ships is the best method of withdrawing tonnage from the steamship market. It is believed by the experts who have studied it that such a method would, in the end, represent dollars saved to the shipping industry and an insurance of normalcy to the shipbuilding industry. It would mean a saving to steamship owners as they will be able to measure with accuracy the depreciation upon a ship down to a point where it is reasonable to retire her and sell her to some ship breaker. And by having a ship-breaking industry in the country, the shipbuilders will have reason to expect that all outworn tonnage will be properly withdrawn from operation and thus make room for new construction. Americans so far have shown but little interest in the ship-breaking business, so when the navy department was presented with the problem of scrapping a large number of its capital ships under the naval limitations agreement entered into with the other naval powers of the world, the question was forcibly brought to the front. The suggestion came up in the councils of the navy in Washington about the first of December, and so quickly was progress made that a conference was called to meet at the navy yard in Philadelphia two weeks later. At that conference various representatives of the navy came up from Washington

and some 150 representatives of various private businesses were called in. The representatives of private interests included financiers, shipbuilders, steel companies, technical publications, etc. The conference was addressed by Admiral Nulton, the commandant of the Philadelphia yard, and by Captains Robert and Chetham.

The navy has several hundred thousand tons of vessels to be scrapped in the near future although the offerings made at Philadelphia on bids which were opened Jan. 16, or one month after the conference in question, included only the battleships MAINE, MISSOURI and WISCONSIN, the targets ex-monitor PURITAN and ex-monitor MANTANOMOH, the cruiser MEMPHIS and the monitors OZARK and TONOPAH. Only three of the battleships and the two monitors are at the Philadelphia navy yard. These vessels at present are practically nothing more than hulks, notwithstanding the fact that they were in active service a year ago. The thorough way in which the navy has stripped them of every movable thing of value was a practical demonstration of the efficiency which can be obtained through a ship-breaking industry.

The cruiser MEMPHIS is now a wreck at Santo Domingo, D. R. The cruiser BROOKLYN is at Mare Island, Cal., and

the cruiser COLUMBIA is at Philadelphia. These represent a particular case as it is conceivable that some of the cruisers may be converted into merchant ships. But according to the naval holiday agreement, none of the vessels offered by the navy for breaking up may be sold to a foreign nation as a fighting ship and by law none may be sold to a foreigner as a merchant ship without the consent of the United States shipping board. But the cases of the BROOKLYN and the COLUMBIA are interesting in view of their possible conversion. The BROOKLYN was built in 1895; has a length of 402 feet; breadth, 65 feet; draft, 24 feet, displacement, 10,068 tons. The COLUMBIA was built in 1892, has a length of 413 feet; draft, 23 feet; beam, 58 feet; displacement 7387 tons.

Of course the navy proposes to sell its outworn ships to a ship breaker, and in accordance with the terms of the naval holiday many ships turned over to ship breakers definitely for scrapping will include some that are comparatively new. In view of the limitations placed upon the future use of these ships, it is essential that some ship-breaking industry be developed in the United States. The naval holiday will require the scrapping of between 400,000 and 500,000 tons of ships now in the American naval fleets. In addition, a number of big naval vessels building must be scrapped.

Sale of Scrap Assured

Upon the basis of estimates prepared by the navy, the scrap requirements of the American steel industry are 500,000 tons a month. This is based upon reports collected by the navy department from the various steel companies, and is based upon a scrap requirement of 12.5 per cent of the steel output of the country. A battleship of the MAINE class contains over 10,000 tons of metal, and obviously the breaking up of the navy ships is not going to flood the market with scrap. Therefore, a ship breaker can reasonably expect to obtain the market price for the materials.

The navy has placed an appraised value of \$120,000 on the MAINE. Upon this, a ship breaker can hope to realize a profit from the sale of the scrap over and above the naval valuation. Scrap is selling for approximately \$12 a ton in eastern Pennsylvania. A small portion of the steel in a battleship is nickel-steel and for every 1 per cent of nickel in the steel the scrap increases \$4 in value. For the 3 per cent nickel steel in naval ships it is believed, \$20 a ton should be realized in the scrap market.

It is obvious from this example that good realization from the breaking up of battleships, indicates realizations in proportion from the breaking up of out-

worn merchant ships. The shipping board is beginning to believe that this is true and instead of attempting again to sell off its wooden fleet has entered into an agreement to break up some of these ships as an experiment. The shipping board has executed contracts for scrapping a few wooden ships under a guarantee to the Emergency Fleet corporation of \$1000 for each vessel and 50 per cent of all profits made out of the sale of the salvaged material from the ships. At least between \$3000 and \$5000 should be realized from each wooden ship so salvaged, and that is nearly twice as much as the ships would bring if sold as ships.

Make Test on Wood Ships

The shipping board is at present merely experimenting with the ship-breaking business, but although it is only an experiment 12 wooden ships will be disposed of in this manner as a test, according to contracts already signed. At the present stage of the business, ship breakers are naturally cautious, but once the industry becomes definitely established it is reasonable to believe that it will be profitable for steamship owners to figure ship-breaking definitely into the costs of merchant shipping. The conference in Philadelphia in December was the first attempt made to bring the necessity of such an industry before the maritime world.

Among the steel companies represented at the Philadelphia conference were the Midvale Steel Co., Jones & Laughlin Steel Co., Bethlehem Steel Co., Carnegie Steel Co., and Lukens Iron & Steel Co. Among the shipbuilding companies represented were the Bethlehem Shipbuilding Corp., Merchant Shipbuilding Co., William Cramp & Sons Ship & Engine Building Co., and the Newport News Shipbuilding & Dry Dock Co. The Philadelphia Bourse and other financial interests were represented. Among the possible ship breakers were Henry Hitner Sons & Co., Philadelphia, and the Lake Railway Supply Co., Chicago. Joseph G. Hitner of the Philadelphia firm indicated that his company would like to take some of the battleships under the plan proposed by the navy. He pointed out that his company has broken up destroyers and has had sufficient experience to warrant it embarking upon the larger job of breaking up battleships.

The navy would be willing to sell the ships upon a deferred payment plan, thereby enabling a company to enter the business of ship breaking. Under this plan 10 per cent of the purchase price would be required at the time of making the bid and 15 per cent more within 30 days, the balance being paid in semi-annual installments over a 3-year period and secured by surety bond. Interest at

5 per cent would be required on the deferred payments.

The three battleships, as an example, offered at the Philadelphia navy yard, are no more than hulks. All guns in the side-batteries have been removed and the 13-inch guns in the turrets are to be permanently destroyed by the navy before the ships are delivered to the purchaser. The acetylene torch will play an important part in the process of breaking-up. Naval experts declare, and they are substantiated by the private experts, that the thickest of the armor plate on the vessels scheduled to be scrapped can be pierced by the cutting torch.

But in bidding, the breaker-up is asked to bid on the ship with the main side-armor removed by the navy and also with this armor on, but to be removed by the purchaser and to be returned to the navy. The navy is to preserve the 22 plates of side-armor from battleships of the MAINE class which are strung between frames 28 and 72. If this is to be removed by the purchaser, it must be estimated upon the removal and placed aboard cars f.o.b. at point designated in the bid. This armor to be returned to the navy in the case of ships of the MAINE class weighs about 506 tons.

Storage Is Charged

Title to the ship will not pass to the purchaser until the required armor is returned to the government. The vessel must be removed from the waters of the navy within 30 days from the date of notice of sale and if not removed after that time a storage charge will be assessed against the purchaser of \$25 a day, including Sundays and holidays.

Included among the ships offered for scrapping are numerous outworn ships which would be retired from service despite any international agreement on a naval holiday. But obviously this holiday makes possible the scrapping of a much larger number of vessels. Out of this grows the possibility of a new industry which may prove to be a boon to the maritime interests of the country. The example set by the navy, in this instance, is destined to prove a valuable object lesson to the shipping board and ultimately a benefit to private owners of ships in the United States. The shipping board owns some vessels which are declared to be worthless as commercial carriers. Their retention as ships constitutes an ever menacing addition to the tonnage supply in ocean trades. They prevent any stiffening in ocean freights and thus check any movement toward restoration of profits to the shipping lines. If the navy is successful in building up the ship-breaking industry in the United States, the merchant marine will be benefited.

Editorial

Changes in Laws Would Avert Subsidy

ANALYSIS of the marine situation has brought both the President and the shipping board into agreement upon the need for a subsidy to protect American shipping. But to make these conclusions effective requires the consent of a third party, congress. The past record of that legislative body makes quite remote the likelihood of any agreement on a subsidy plan. In the absence of the President's formal declaration, indications are that the plan will call for a \$100,000,000 revolving fund to permit loans at low interest rates, deduction from income taxes of a part of the freight paid on goods carried in American vessels, assurance of one-half of the immigration reserved for American vessels, extension of the coast-wise laws to the Philippines, provision for a naval reserve.

If congress decides to provide a ship subsidy, the chance for retaining and increasing the country's strength in ocean shipping will be materially stronger. Marine interests are united in their demand for some form of government encouragement. A subsidy is the indirect rather than the direct method of solving the problem. The present laws which impose high operating costs are the real barrier. If congress would give shipowners freedom to operate their vessels instead of tying their hands, the necessity for a subsidy would disappear. But presumably as long as congress insists on favoring one class of citizens, the legislators have no sound reason for refusing assistance to another class.

A subsidy is merely a protective tariff. If this definition were more clearly appreciated, much of the opposition to a subsidy would disappear.

It All Depends Who Asks the Favor

AN EARLIER administration was willing enough to abrogate some treaties when it was proposed to open the doors wide to seamen deserting from foreign ships in American ports. When a labor union demanded the abrogation of a treaty promise, congress and the President were willing enough to accede but when it is proposed to grant assistance to a languishing maritime endeavor through discriminatory duties and port assessments two presidents have found it abhorrent to take similar steps.

Preferential Rail Rates Unlikely

TO BECLOUD the issue, members of the shipping board keep promising that the provisions of section 28 of the merchant marine act of 1920 will be put into effect. This section permits the granting of preferential rail rates on goods brought or carried in American ships. This provision of the Jones act was designed to grant American shipping a real assistance

much after the fashion planned under section 34. But if existing treaties stop discriminatory customs duties being granted on goods imported in American ships, by analogy are we prohibited from authorizing preferential freight rates? Unless the restraining provision of the treaties is abrogated, our hands are bound. Assistance to the merchant marine is a doubtful product of either section 34 or section 28.

Who Carries Our Exports

IN 1920, only 30 per cent of American exports to the United Kingdom were carried in American bottoms; 33 per cent of the exports to continental Europe, 20 per cent to the Mediterranean, 18 per cent to east coast South America, 33 per cent to Africa and 25 per cent to Australia and India went in American ships. In only one instance did American ships carry more than half, 66 per cent of the exports to the Orient.

These figures, compiled by a special examiner for Vice President Smull, of the Emergency Fleet corporation, show a distinct improvement over prewar averages but a drop from the relative strength of a year ago—and the tendency is downward. "The immediate future of the country and pre-eminently the future of American shipping is in the hands of the manufacturer who must depend upon the development of foreign markets as an outlet for capacity production," says the report, "and these exports from their very nature must go to countries with whom heretofore we have not enjoyed a large amount of trade."

This truth is becoming better known. American manufacturers need foreign trade for the first time and in that fact is the best assurance for the future of American shipping.

Uncle Sam Plays Santa Claus

TO BRING about an agreement on the limitation of armaments, this country is willing to sidetrack not only the Panama "free-tolls" bill, but also to put the soft-pedal upon all American claims maritime. Apparently the state department believes we must sacrifice our rights upon the high seas; we must sacrifice our right to give encouragement to our merchant marine; we must sacrifice our shipbuilding plants; we must sacrifice our right to make full use of the Panama canal, so that the arms conference can be successful. The foreigners sitting around the squared table in Washington must chuckle with glee. We are willing to sacrifice so much that the English, Japanese, the French, the Italians may re-establish themselves! Do these foreigners not obtain sufficient benefit out of the limitation of armaments, without asking America to sacrifice so much more than the others are giving up?

Foreign Insurance Escapes Tax

American Firms and State Bureaus Seek Means To Curb Alien Companies Which Force Higher Domestic Premium Rates

AN INVESTIGATION of the activities in the United States of foreign marine insurance companies, which have been securing business through licensed brokers without paying the federal and state taxes imposed upon American companies, is under way at the offices of the New York state insurance department. A very large volume of premiums is said to have been sent abroad during the past year, and domestic companies, because of their large overhead and heavy tax burden, have not been able to quote as low rates as their foreign competitors.

As the unlicensed foreign companies do not come under the jurisdiction of state insurance departments they legally can not be reprimanded. American marine insurance companies, however, are urging that the licenses of brokers who place business abroad be cancelled and this suggestion is receiving the consideration of the insurance departments. Underwriters admit that such action might be unpopular among shippers, who are obliged to seek insurance at the lowest rate possible to compete with trade abroad, but they feel that as they are made to pay large taxes for the privilege of transacting marine insurance they should at least be protected against unfair foreign competition.

Few American marine insurance companies made any profit last year and many actually report losses in excess of premiums, 1921 statements filed with some of the insurance departments show. Several of the weaker companies have discontinued their marine business entirely. With the year's showing in print, companies believe that the auspicious time to call the public's attention to the activities of unadmitted London Lloyds and other unauthorized foreign companies, has arrived.

At the first meeting to consider the question of what action should be taken by New York state, a committee composed of some of the most prominent marine underwriters in the United States was appointed to study the situation and report back to the superintendent the latter part of January. Hendon Chubb, president of Chubb & Son, marine underwriters and Archibald G. Thacher, counsel for the American Institute of Marine Underwriters were named to represent the domestic marine insurance companies on the committee. W. H. Laboyteaux, president of Johnson & Higgins, New

York, marine brokers, and Wendell P. Barker, were appointed spokesmen for the licensed brokers who have been transacting business with unadmitted companies. The state insurance department announced that before any action is decided upon all interests affected will be invited to appear and state their case. It is expected a representative of the federal government will participate in some of the hearings which are likely to continue for several months.

That New York intends to set the example in dealing with unlicensed companies that are evading taxes is shown in the following declaration by Francis R. Stoddard, superintendent of insurance, who said:

"The question of the London Lloyds has been undecided too long. I am either going to settle the whole matter or find out just who is blocking the settlement. If some interest is blocking the settlement I intend to turn the spotlight of publicity upon it."

* * * *

See Bill as Real Model

PASSAGE of the model marine bill for the District of Columbia, which went through the senate recently, is acclaimed by marine insurance underwriters as the first step in the direction of solving the many legislative obstacles which impede their progress. The bill, which is intended to serve as a model for legislation on marine insurance in all states, has received the approval of the national convention of insurance companies, a body composed of the supervisors of insurance of all states. The bill is intended to place domestic underwriters on a parity with foreign competitors. Among the reforms provided in the bill to help build up the American marine insurance business, are the following:

Taxing the net profits of a marine insurance company instead of the gross premium. At the present time, domestic companies are taxed on the money they receive, regardless of whether they make any profit.

Enabling marine insurance companies to transact other lines of insurance excepting life, fidelity and surety bonding, if they desire to do so. Present laws strictly limit just what other kinds of insurance marine companies may write.

Removing existing limitations on the financial powers of companies which prevent operations in foreign fields by permitting credit for deposits made in other countries over the legal reserve liability as an asset in the company's home statement.

Facilitating direct writing companies

to exchange business with other companies if proper standards of solvency are met so freely as to make the reinsurance automatic and practically national in scope.

One of the chief purposes of the model marine bill which was drawn up by Congressman E. C. Edmunds and Prof. S. S. Huebner, an expert on marine insurance matters, is to bring about uniformity in marine insurance legislation in the various states.

* * * *

Board Wants Lower Rates

EFFORTS are being made by the United States shipping board to induce American marine insurance companies to lower their rates on shipping board vessels. It was charged recently that these ships were being discriminated against because they were shipping board vessels and were obliged to pay higher rates than privately owned ships. In answer to the charges, the insurance companies stated that excessive rates have only been applied in cases where the vessel itself has been of doubtful seaworthiness or the operator known to be inefficient, making the risk a more hazardous one. In their denial of the shipping board's charges, the marine insurance companies present their case as follows:

"If there is a line of steamers which operates good boats with competent officers and good record showing few claims the line is given a low rate in accord with its record. Another line may be operating between the same points but the management and personnel are not so good and the record shows frequent claims; this line will be charged a higher rate accordingly. If some men with no knowledge of the shipping business start a new line and in the underwriters' opinion are incompetent, the probabilities are that their record will be bad and the rate is fixed on that basis.

"It is an unfortunate fact that many operators of shipping board boats were incompetent and had a bad record and the rates on these boats were fixed in accordance with the record. Where shipping board boats were in the hands of competent operators, the rates have been exactly the same as on similar vessels privately owned."

On behalf of the marine insurance business, Benjamin Rush, president of the Insurance Co. of North America, Philadelphia, and William H. McGee, president of William H. McGee, Inc., and managing director of the marine syndicates, have been conferring with officials of the Emergency Fleet corporation at Washington. The conferences have so far resulted in the shipping

board admitting that while discriminative rates may have been justified in the past, the cause has been remedied by improved conditions and the inauguration of a higher system of operation. In the event of negotiations falling through, the shipping board is threatening to establish a government marine underwriting department.

* * *

Companies Report Losses

EXCESSIVE losses, reduction in premium income, heavy repair costs and trade stagnation have caused the annual statements of most marine insurance companies to show little or no profit. Statements of some of the more unfortunate companies show loss ratios of more than 200 per cent. With the new year a few companies, seeing no brighter prospects ahead, have announced their withdrawal from the marine insurance field. Among the most recent to drop this line were the Equitable Assurance Co. and the Knickerbocker Insurance Co. Both companies have cancelled their outstanding open policies and have reinsured the remainder of their business. The Eureka Fire & Marine Insurance Co., Cincinnati, has announced its merger with Security Fire & Marine Insurance Co. of that city.

Foreign companies likewise have not had a good year, although on the average they have done considerably better than companies in this country. The new year brought the news of the liquidation of two Scandinavian companies, the Norske Lloyd and the Norwegian Globe, both of Christiania. The companies have announced they will endeavor to safeguard the interests of their policy holders through the formation of two new companies. These two companies operated previously in the United States. The Norske Lloyd branch in this country was liquidated some time ago while the American branch of the Norwegian Globe was purchased by the General Casualty & Reinsurance Corp., New York, and is not affected by the liquidation proceedings of the Scandinavian company. In addition to these, several London offices have announced their withdrawal from marine insurance.

* * *

Differ in Views on 1922

MARINE underwriters are wondering what 1922 has in store for them. Opinions differ but occasionally a word of optimism is heard. Hendon Chubb, president of Chubb & Son and one of the leading marine underwriters of the country, does not see the future as clouded as many of his colleagues. Mr. Chubb is confident marine insurance will return slowly but surely to a normal

basis. This will be brought about by two things, Mr. Chubb believes: First, the elimination of the weaker companies which for the past two or three years have been a harmful factor in the market, and second, by the public discriminating in favor of old and reliable concerns.

William H. McGee, another prominent insurance man, does not expect to see any improvement for a long time to come. The United States exports abroad only the surplus of its manufactured products and it will be some time before manufacturers show a surplus output, Mr. McGee thinks. Prospects for marine insurance are anything but satisfactory in his opinion. Matters will be worse if the federal government goes into the insurance business as it has threatened to do but he does not believe the shipping board will embark on such a perilous experiment as its own marine underwriting insurance department would prove.

* * *

Adopts Stowage Rules

AT A recent meeting of the board of underwriters of New York, the following rules were adopted regarding the stowage of cotton and rosin and cotton and turpentine:

"These two commodities should be carried in separate holds whenever it is practical to carry out such stowage. Cotton may also be carried in the lower holds and rosin in the 'tween deck if it be understood that the 'tween deck hatch is to be securely battened down.

"Cotton and turpentine must never be carried in the same hold. Whenever it is practical these commodities should be stowed in holds separated by two iron or steel bulkheads or engine room space. One steel bulkhead at least must be between these two commodities.

"Whenever cotton and rosin or cotton and turpentine are carried in a vessel loading under the inspection of a board surveyor, he must in future state in his certificate just how these commodities have been stowed."

* * *

Study Marine Insurance

AN INVESTIGATION of marine insurance in the United States is being conducted by a committee appointed by the United States shipping board, composed of Commissioner Meyer Lissner, chairman, Dr. William Leslie, Dr. S. S. Huebner, W. C. Radner, manager of the insurance department of the Standard Oil Co. of New Jersey, B. K. Ogden, director of insurance for the board, and W. J. Love.

L. J. Folse, president of the Marine Shipping & Forwarding Co. was elected chairman of the foreign trade bureau of the Association of Commerce at New Orleans at the annual meeting held recently.

Obituaries

F. Albert Bartlett, pioneer shipping man of Puget sound, died recently in California. He was born in Kennebunkport, Me., in 1852. Mr. Bartlett was identified with Puget sound shipping since 1869 when he located at Port Townsend, Wash. He actively was engaged with stevedoring for many years but also acted as ship's agent, Peruvian consul and in other capacities.

W. J. Jones, stevedore of Portland, Oreg., died from pneumonia while making a business trip to San Francisco. Mr. Jones until 10 years ago was engaged in stevedoring at Port Townsend and Seattle and since moving to Portland built up a lucrative business. He made an extended tour of European ports several months ago.

Capt. Marcus E. Wright, said to be the oldest pilot in the waters of Massachusetts bay, died at his home in Weymouth, Mass., recently. He was 72 years old and had been a pilot since he was 17 years old.

Capt. Lincoln E. Achorn, for many years in command of the steamers of the Fiske fleet, out of New York, died recently at his home in Portland, Me., at the age of 89 years.

Is First Electric Ferry

The first electrically driven ferry boat ever operated in California is to be installed by the Golden Gate Ferry Co., with offices and landing-place at the foot of Laguna street, San Francisco. The ferry will ply between San Francisco and Sausalito, directly across the bay. Permission for the establishment of the line was given by the California state railroad commission which also authorized the use of \$325,000 from the proceeds of a \$1,000,000 sale of capital stock, previously authorized, in the construction of the boat. This vessel is to have a capacity of 85 automobiles and 500 passengers, a speed of 15 miles an hour, and will make the trip one way in 18 to 20 minutes, considerably reducing the time of the present steam ferries.

The boat will be equipped with two 500 brake horsepower diesel engine units, turning separate dynamos, which will furnish power for two motors, each direct connected to a propeller shaft. Steering gear and all other operating machinery will be electrically driven. Aven J. Hanford, president of the company, stated to the commission that considerable economies in operation will be made by the use of electrical equipment. Two other ferry boats, of similar type, are to follow the first, as soon as it is put into operation.

Book Review

A Manual of Marine Engineering by A. E. Seaton; cloth, 984 pages, 6 x 9 inches; published by Charles Griffin & Co., Ltd., and furnished by MARINE REVIEW for \$10.00.

The present volume is the eighteenth edition of this well known, standard work devoted to the application of accepted theoretical principles to the design and construction of marine machinery. It is pointed out by the author that the many changes in marine engineering practice due to the war, made it necessary to add more material, especially regarding heavy oil engines, geared-turbine engines and superheaters. The book in its present condition is thoroughly up to date.

The resistance of ships and the indicated horsepower necessary for propulsion is treated in a comprehensive manner followed by a description of the

various types of marine engines from the oldest to those in use at the present time. This chapter is of especial interest as it traces the actual growth of the marine engine from its infancy. The various parts that enter into the construction of a marine engine are described and rules laid down for proportioning them correctly to withstand predetermined strains. A chapter devoted to the efficiency of marine engines is of value as it gives the results of exhaustive experimentation with superheated steam.

Boilers, condensers and auxiliary machinery are described fully, as are valve gears and valve diagrams. Of especial interest to the young engineer is a chapter devoted to the fitting of machinery, the starting and reversing of engines, etc. The various materials entering into the construction of marine engines are described, the use of oil and

other lubricants is explained, the object of tests and trials is set forth while an appendix is devoted to diesel engines, turbines, superheaters, Lloyd's and board-of-trade rules, etc.

The book is exceptionally well written, is clear and comprehensive and will prove a valuable addition to the library of the marine student, the marine engineer, and the naval architect.

In connection with its recommendations for a bond issue of \$5,000,000 for additional pier, warehouse and grain elevator facilities, the Norfolk port commission has just made public a report on the city two years ago from the war department. It shows that all of the available space at the army base is now being utilized and that the lease has been profitable both to the city and to the war department.

Two New Passenger Ships for U. S. Flag

TWO new passenger vessels for the transatlantic traffic, which will compare in excellence with the newer ships of the Cunard line, will be placed under the American flag by the United American Lines, Inc. This results from the purchase of the *BRABANTIA* and the *LIMBURGIA* from the Royal Holland Lloyd line by the American Ship & Commerce Corp. The United American is the operating agent for this corporation, as well as the American agents for the Hamburg-American line with which it has a joint operating agreement. The two Dutch vessels, which have been in operation a little over a year to South American ports, will be transferred to their new owner just as soon as they return from their present voyages and immediately put under the American flag. It is expected that they will sail in their new runs about the end of next March or the first of April. When placed under the American flag the new owners will rename the ships.

The United American Lines now has three passenger vessels of the third-class in the Hamburg run. These are the *MOUNT CLAY*, *MOUNT CARROLL* and *MOUNT CLINTON*. According to the joint agreement with the old German company, the Hamburg-American line also has three passenger vessels of similar class but with a few cabin accommodations in the same service. The German vessels are the *HANSA*, *BAVERN* and *WUERTEMBERG*. The latter two are to be replaced with new vessels some time this year, it is understood. But with the purchase of the two Dutch boats, the United American will this year have five vessels in the run against the three of the German company. Three of the

American vessels match the three German but the two new American vessels are of an improved type. According to present plans, the Hamburg-American line will not be able to match these two new American ships until 1923, when it will receive from the builders two passenger vessels of the first class which have been contracted for this same service.

The joint operating agreement existing between the American line and the German line provides for the operation of an equal number of ships of both companies on the same runs. This would presume ships of equal class. In this case, the American line is able to get almost a year's lead on the German company. The purchase of the two new ships by the American company is considered quite a price in shipping circles as passenger tonnage is just now very scarce and it is not believed that there is another large passenger vessel in the world which can be purchased. The United American Line refused to divulge the purchase price but it is believed that the new vessels were obtained at a bargain. It may not have been as low as \$100 a gross ton, but it is believed that the Harriman company did not pay much more than that for the ships.

R. H. M. Robinson, president of the American company, stated that the *BRABANTIA* and the *LIMBURGIA* were built in Germany originally to the order of the Hamburg-American line. They were in the course of construction when the war broke out. Work on them was suspended for a time and they were not completed until 1920. Before the ships were finished they were sold to the Royal Holland Lloyd, under whose flag they first

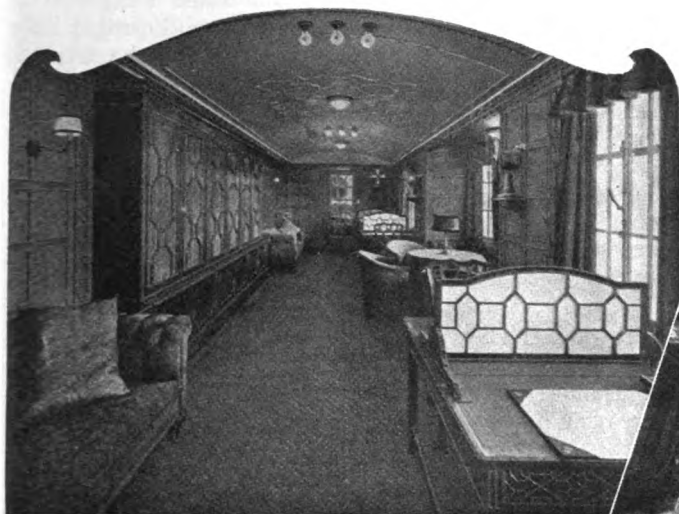
went into service. The Dutch line has been operating the two ships between European and South American ports. Recently it became known that they were willing to entertain bids for the steamers. Realizing that the ships were of a type greatly needed in the American merchant marine, the Harriman interests began negotiations for their purchase, which now are concluded.

The American Ship & Commerce Corp. has had the vessels carefully surveyed, both as to their suitability for the north Atlantic service and their appeal to the tastes of north Atlantic travelers, and are satisfied that they will prove popular on this route. They give the maximum of luxury and comfort in every respect.

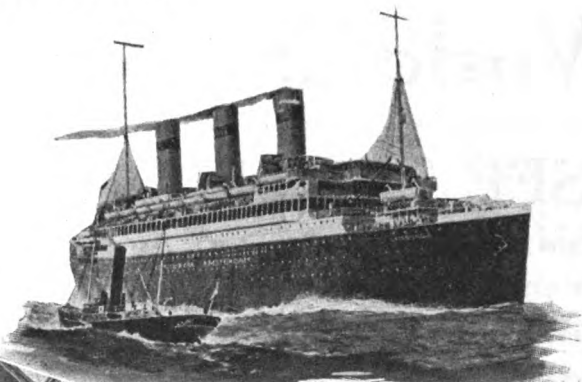
The steamers are similar as regards general design and equipment, though differing in certain measurement details. The *BRABANTIA* is 596 feet long, has a breadth of 72.3 feet, and a depth of 40.2 feet; the *LIMBURGIA* is 592 feet long, having a breadth of 72.3 and depth of 39.7 feet. Both are oil burning, triple screw steamers of 17.5 knots speed. They have passenger accommodations for about 400 first-class, 260 second-class and 900 third-class.

They will be operated between New York and Hamburg with calls at French and English channel ports. They will fly the house flag of the United American Lines, which is the operating organization for the American Ship & Commerce Corp. If plans for shipping aid which are now being discussed in Washington are approved by congress, Mr. Robinson pointed out, the acquisition of these two ships will constitute the mere beginning of a program of expansion which his company now has in mind.

The splendid liner Limburgia which with sister ship Brabantia now flies the American flag.



The luxurious accommodations for 360 first class passengers are revealed by these views, the first published in this country. Above, writing room and library, below, first class smoking room.



First class dining room.

Every effort is made to add to the comfort of the transatlantic traveler. Above is the light and cheerful social hall or winter garden. Ladies' saloon shown below.



Unusual provision also is made for the care and comfort of 148 second, 132 intermediate and 920 third class passengers. With its crew of 417, each ship carries 1977 persons.

World Charter Market Reviewed by

SEE TRADE GAIN

Shipowners Expect Rate Improvement—Advances Made as Spot Tonnage Demand Continues Firm

WITH the turn of the year traffic managers of several steamship lines expressed great confidence in the future. Their faith is due not to the fact that the established conferences have been nearly broken up and that freight rates are the lowest but more especially because coincidentally the inexperienced steamship operator has been forced out of business. The new elements in the steamship field have been compelled largely to abandon the business and now the trade is left almost exclusively in the hands of those companies which have had greater experience. Today the Emergency Fleet corporation has only 43 active agents handling 321 ships. All the government's tramp steamers have been withdrawn. Since the present shipping board took office, 526 steel cargo carriers have been withdrawn from service and 173 ships have been allocated as follows: 80 for berth service, 13 for bulk cargoes, and 80 as substitutes.

Much better times apparently are ahead if the Emergency Fleet corporation persists in its plans to remove government competition in the shipping field as rapidly as possible. Vice President Smull of the corporation recently pointed out:

Russian Trade Aids Shipping

"We have been struggling hard with the bareboat charter as the times have been against us, but we are most pleased to say that we have 23 vessels under bareboat charter which turn in a revenue of about \$50,000 a month. With any improvement in the freight market at all undoubtedly we will have the opportunity of putting forward quite a few boats on time charter basis."

"Last year was the worst I have ever seen in my decade of activity in shipping," declared H. H. Raymond, president of the Clyde-Mallory lines. "It could not have been worse. I am looking forward now to a pickup in trade that will result in more business for shipping."

Such opinions are generally expressed and one of the most tangible results has been the partial opening up of trade with Russia. The agreement of congress to appropriate grain relief to the sufferers in the Volga region has necessitated the chartering of a number of vessels to carry the cargoes. Congress stipulated that the grain should be transported in American bottoms and probably a hundred ships will be engaged. While it is anticipated that vessels of the Emergency Fleet corporation will benefit chiefly from this Russian relief, private operators are doing all they can to keep the government's ships out of trade. A petition has even been filed asking for the withdrawal of the Colombian services operated by the Clyde Steamship Co., as the lines in the Colombian trade are adequate.

The United States lines, operating the government's

transatlantic services, have re-established their call at Queenstown, now that the British authorities have lifted the ban on that port. Next month the GEORGE WASHINGTON will be withdrawn for a cruise for which she was chartered some time ago. To take her place the United States lines are seeking the allocation of one of the government's new 535-foot passenger boats. These services in the transatlantic trade, it is reported, have been doing a heavy business for this season of the year. American diplomats and consular officers have at last been induced to book passage on vessels flying the American flag.

C. D. Mallory & Co. have decided to name their steamship services the Mallory Transport line. Under this name the Baltimore Oceanic Steamship Co. will hereafter be known. The Mallory Transport line will ply between Atlantic ports and the west coast of Italy and the Adriatic, Canary Islands, Portugal, Spain and western Mediterranean, including Marseilles. Among the American ports served are New York, Philadelphia and Baltimore. The Kerr Steamship Co. is maintaining a regular monthly sailing to the Far East, reaching Yokohama, Kobe, Shanghai, Hongkong and Manila. The International Mercantile Marine Co. is considering the re-establishment of passenger services by the Atlantic Transport lines to London.

Work To Boost New U. S. Trade

The Strachan Shipping Co. plans a service from New Orleans to London and Rotterdam. This company has long been maintaining services from South Atlantic ports. The Munson Steamship lines has placed the new passenger vessel, MUNARGO, in service between New York and Cuba touching to Nassau. The Luckenbach Steamship Co. has purchased the 10,000-ton Norwegian steamer ARGENTINA. The vessel will be got ready for the coastal services. The Earn-Line Steamship Co., Philadelphia, which has been operating a freight service to the West Indies, has decided to dissolve. The Pacific Mail Steamship Co. has inaugurated a passenger service between New York and San Francisco via the Panama canal. It will be a fortnightly service. Vessels of Sea Carriers, Inc., will hereafter be operated by Crowell & Thurlow, Boston. The line, as reorganized, will be known as the C. & T. Intercoastal line, and regular sailings will be continued, as formerly

John A. Donald Dies

JOHN A. DONALD, only shipping board commissioner who ever served a full term, died at his home in Rye, N. Y., Jan. 14. He was named by President Wilson, together with Bernard N. Baker, William Denman, John B. White and Theodore Brent in January, 1917, being confirmed Jan. 23, four days after the other four members. He completed his term early in 1921. He was a practical ship operator, having purchased his first ship in 1897 and established the Donald Steamship Co. in 1902. He built up this freight line until named to the shipping board. Mr. Donald proved to be an unusually sincere and conscientious public official.

Experts in this Country and Abroad

from New York and Baltimore via the Panama canal to principal ports on the Pacific. With the general shifting in control in the shipping field it is but natural that new elements in traffic should develop. Shipping of grain to Russia and the bringing of ore from the Black sea are only two of the items. The Munson line has tried out experimental shipments of Argentina cherries and now it is planned to make a sincere effort to develop a trade in South American fruits to the New York market.

In conjunction with the department of commerce, an investigation of the coal trade is planned with the object of developing a larger export trade in American bottoms in this commodity. The coal trade has recently dwindled to little or nothing and foreign competition is feared. Since the declaration of open rates on grain by the transatlantic carriers, the shipping board has found it difficult to maintain a 5-cent differential on flour rates, in accordance with the promise made the American millers some time ago. Some overtures on the part of the traffic authorities of the shipping board have been in progress with the British lines, but to little effect as yet. The English, it is said, are not anxious to maintain the flour differential as they are willing to do all they can to divert the grinding of grain to English flour mills.

Rates Drag Bottom

The shipping board has found it increasingly difficult to maintain ocean freight rates, and so many commodities are now carried on the open list that the conferences are considered more or less inoperative. The shipping board has decided, however, not to maintain the expense of the sec-

retary to the conferences nor to maintain offices for this purpose. Hereafter the lines which are members of the various conferences are asked to bear the expenses of the conferences. A decision has been reached to improve the shipping board services to West African ports, operated by the Bull line. Additional sailings

will be scheduled and rates lowered to meet English competition. Some of the rates to Italy have also been cut, commodity rates in the Scandinavian-Baltic conference have been lowered, and the Continental conference has likewise reduced rates on several commodities. English lines have, according to advices, cut their rates in half between United

Incorporations Drop

INDICATED investment in marine firms during 1921 was \$60,190,000 compared with \$585,400,000 in 1920. In each of four months of 1920, the authorized capital of new firms exceeded the entire total for last year. These records are indicated by reports of the *Journal of Commerce*, New York. In recent years, the indicated annual investment in marine enterprises has been as follows: 1915, a total of \$37,062,000; 1916, a total of \$69,466,000; 1917, a total of \$271,503,000; 1918, a total of \$120,353,000; 1919, a total of \$323,613,000; 1921, a total of \$585,448,000; 1921, a total of \$60,190,000. Two-thirds of last year's total was recorded in the first half of the year.

RATE CUTS END

Foreign Slashes in Quotations Near Bottom—Oriental Rates Show Strength but Japs Dominate Trade

Kingdom and European ports to United States Pacific and Canadian Pacific coast ports. The Japanese have cut the rates between New York and the Far East and open schedules practically have been in effect.

Since the holidays, rates have been holding rather firm despite the slowness in business. Foreign owners, it is believed, have about reached their bottom prices on charters. Grain charters for the Russian relief were made at 35 cents, Atlantic loading, and 39 cents, Gulf loading. Sugar from Cuba to United Kingdom was done for \$5.75. Time chartering has been slow although one steamer was signed on for the West Indies trade at \$1.15 for the round trip, whereas another boat was closed at \$1.40 for three months. Coal was taken from Norfolk to Buenos Aires for \$3.80, and sulphur charters were closed at \$5.25 from Sabine to Bordeaux.

Foreign Rate Cuts Near End

These rates are still unprofitable to the American owners, although the losses today are not so great as they have been at times during the past year. American owners have been able to work down their operation costs, and events are proving that the foreign shipowners have about

reached the limit of their endurance. With a subsidy it is believed American competition will be put on a firm foundation, and all shipping interests are now working to the end that congress can ultimately be persuaded to enact some form of legislation for maritime aid. This is undoubtedly the darkest hour before the dawn. The foreign companies, and the English especially, are exerting themselves to the utmost of their power to put American shipping out of the reckoning. By lowering rates to ridiculous figures they hope to incur the favor of shippers throughout the world and thereby foster a good will which will stand them in excellent stead when the day for re-establishment of the conferences arrives.

The White Star line and the Cunard line were quick to follow the lead of the United States lines and established Queenstown as a port of call. The Cunard line also, it is said, expects to establish shortly a Mediterranean-Vigo-New York service. The Ward and the American lines formerly maintained services in that run but they have been discontinued.

The North German Lloyd line has announced that its first ship since the war, the SEYDLITZ, now in the South American service, will initiate next month a service between Bremen and New York. She will be followed by the HANNOVER and the YORK at fortnightly intervals. In view of the agency contract the United States lines has with the German company, considerable anxiety has been expressed over the outlook for competition. A. E. Clegg, for the agents of

the United States lines, is now in Germany examining into the matter.

Lykes Bros. have been selected to be the agents at New Orleans of Hugo Stinnes' new German steamship service from Hamburg. As an outcome of the serious depression in Swedish shipping the Swedish Lloyd Steamship Co., one of the largest shipowners in Sweden, is understood to be negotiating a sale of 12 big vessels, aggregating 30,000 tons to Stinnes. It is said that Stinnes intends to place the ships in his Mediterranean and West African service.

Believe Rates Are Stronger

While a majority of north Pacific charters have been done at private terms during the past month, it is no secret that the rate on lumber to the Orient has firmed in that time while in other directions ocean freights have as a rule held their own. It is the general opinion that charter rates have about reached the bottom in the north Pacific market. If business develops as is expected early in the new year there is every reason to believe that some trades will register a perceptible increase in rates before next July.

During December, rates on lumber to Japan advanced on an average of 50 cents per thousand feet while recent time charters for Pacific trades show an increase. The latest time charters on this coast were closed at \$1.20 per deadweight ton per month for a 12 month period. Two months ago charters on a similar basis were done at \$1.10.

Japanese steamers continue to dominate the transpacific business to the Far East. The month has witnessed the chartering of 10 or a dozen Japan freighters to carry surplus offerings of lumber and merchandise. British tonnage also is active in this trade, several charters of that nationality recently having been closed. One was fixed at \$15 per thousand feet for lumber which is about the going rate today.

So active has been the demand for space to Japan, China and the Philippines that many of the regular lines are refusing to handle lumber, preferring other kinds of cargo. Consequently most of the lumber movement is confined to tramp vessels fixed for this business. The various lines are booking lumber at from \$15 to \$17.50 depending on the size. The demand from Japan for North Coast forest products continues unabated and the momentum of this movement has caused ocean freights to advance despite active competition from the various ocean services. Lumber prices also have advanced rapidly and the greatest difficulty of exporters is to get mills to cut the orders. As a rule the manufacturers are unwilling to book much in advance as they believe conditions justify further increases in price.

Wheat Rates Out of Line with Flour

Reduction of the wheat and flour rate to the Orient from \$7 to \$6 has stimulated the movement of considerable flour. However, Japan is not buying wheat in quantity at present because the Pacific coast price is out of line. Canned and salted fish, cotton, copper, rice and other general cargo are moving to the Orient in fair volume with rates remaining firm.

Transpacific operators are very hopeful that the new import and export rates announced by the transcontinental railroads will bring back to Pacific ports much cargo that was diverted to the all water Pana-

ma route when rail rates were raised in 1920. Steel and steel products are especially affected by these new rates and an increasing volume of this freight now is expected to pass through Pacific terminals. Eastbound cargo is moving in limited volume, although the imports of silk have materially increased in recent months. Other freight is scarce, however, and in accepting north Pacific business owners of vessels figure sufficient income from westbound freight to pay for the round voyage as tramp steamers are arriving in ballast. Some coal has been brought from Japan as ballast but this has not been found to be profitable business.

Two foreign schooners have been fixed for lumber from north Pacific to Callao at a rate reported to be \$17 but the South American export demand is light and business is poor in that direction. South Africa has been done at \$23.50 for a sailing vessel while several small sailers have been taken for Australia at private terms. There is no business to the United Kingdom and northern Europe, the regular lines having difficulty in obtaining cargo even at present open rates which means that conference agreements have been temporarily abandoned and the companies are accepting what rates are offered.

Intercoastal Competition Is Keen

On the intercoastal route the competition is keen. More than ample tonnage is available to handle the cargo offered. Eastbound the conference rate on lumber remains at \$18 but space is readily obtainable at \$16. It is evident that the water lines are anticipating the announced reduced transcontinental rail rates and an interesting rate war between rail and water may not be far in the future. The water lines have just cut the rate on steel and steel products 20 per cent, announcing a 60 cent rate in lieu of the former rate of 75 cents per 100 pounds. This means a cut of \$3 per ton and it is expected to precipitate more lively competition.

Other charters of the month include a Danish motorship to freight railroad ties from north Pacific to the Mediterranean and two Norwegian steamers taken on time at \$1.20.

Shipping board tonnage lies idle at almost every north Pacific port and there is little prospect of its engaging in competition with foreign lines to any extent. The bare boat plan of chartering has not appealed to operators. However, the board has allocated a number of its carriers to a large operating firm which has had surplus offerings of cargo for the Orient. It is understood that these extra vessels were assigned under the old managing operators form 4 charter party, after the operators had been able to convince the board the business was profitable.

December Traffic Best of Year

Several factors at the close of the year combined to increase traffic through the port of Boston, with a result that December closed with the best total freight tonnage for the port of any month of the year. The closing of the port of Montreal always results in a certain amount of overflow tonnage being diverted to Boston and Portland. This year the amount which was shipped too late to be handled at the northern port was unusually large and because of a strike in effect at Portland during the last two weeks of the year, Boston was able to obtain much of this traffic.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated
Quotations Corrected to Jan. 4, 1922, on Future Loadings

New York to	Grain	Provisions	Cotton (H.D.)	Flour	General cargo cu. ft.	100 lbs.	Finished steel	Virginia cities	Coal from North Pacific	Lumber Per M. ft.
Liverpool.....	3/3	\$0.60	\$0.25	\$0.19	\$0.40	\$0.75	\$7.00T	.....	San Francisco.....	\$6.50 to \$7.00
London.....	3/3	0.60	0.25	0.19	0.40	0.75	7.00T	.....	South California.....	7.50 to 8.00
Christiania.....	\$0.21	0.40	0.47	0.26	0.45	.90	8.00T	\$4.00T	Hawaiian Islands.....	10.50 to 12.00
Copenhagen.....	0.21	0.40	0.47	0.26	0.45	.90	8.00T	4.00T	New Zealand.....	15.00 to 18.00
Hamburg.....	0.15	0.35	0.25	0.20	0.45	0.82½	9.00T	4.00T	Sydney.....	15.00 to 18.00
Bremen.....	0.15	0.35	0.25	0.20	0.45	0.82½	9.00T	4.00T	Melbourne-Adelaide...	18.00 to 20.00
Rotterdam.....	0.14	0.32½	0.22½	0.19	0.40	0.75	8.00T	3.50T	Oriental ports.....	15.00 to 17.50
Antwerp.....	0.14	0.32½	0.22½	0.19	0.40	0.75	8.00T	3.50T	Peru-Chile.....	17.00 to 18.00
Havre.....	0.14	0.50	0.22½	0.19	0.40	0.75	8.00T	3.75T	South Africa.....	23.50 to 25.00
Bordeaux.....	0.14	0.50	0.22½	0.19	0.40	0.75	8.00T	3.75T	Cuba.....	18.00
Barcelona.....	0.21	20.00T	0.55	10.00T	—20.00T—	—	12.00T	4.10T	United Kingdom.....	90s
Lisbon.....	0.21	20.00T	0.55	10.00T	—20.00T—	—	12.00T	4.00T	United Kingdom (ties)	70s
Marseilles.....	0.21	0.75	0.75	0.40	—20.00T—	—	8.00T	4.00T	New York.....	16.00 to 18.00
Genoa.....	0.21	0.75	0.42½	0.50	0.50	1.00	9.00T	4.00T	New York (ties).....	15.00
Naples.....	0.21	0.75	0.42½	0.50	0.50	1.00	9.00T	4.00T	Buenos Aires.....	17.00
Constantinople.....	0.23	10.00T	0.22	0.22	—15.00T—	—	15.00T	4.75T		
Alexandria.....	0.21	12.00T	0.22	0.22	—17.00T—	—	12.00T	4.00T		
Algiers.....	0.35	0.85	0.40	0.40	—22.00T—	—	12.00T	4.00T		
Dakar.....	10.50T	14.50T	15.00T	15.00T	—20.00T—	—	10.00T	4.00T		
Capetown.....	10.50T	23.00T	15.00T	15.00T	—23.00T—	—	10.00T	4.00T		
Buenos Aires.....	.....	.....	.....	.....	—20.00T—	—	8.00T	3.50T		
Rio de Janeiro.....	.....	.....	.....	.....	—22.50T—	—	10.00T	3.50T		
Pernambuco.....	.....	.....	.....	.....	—23.50T—	—	10.00T	3.75T		
Havana.....	0.15*	0.40*	0.20*	0.20*	0.47*	0.94*	0.30*	1.50T		
Vera Cruz.....	.....	0.30	0.30	0.30	0.45	.90	0.35	2.75T		
Valparaiso.....	.....	1.07	0.80	0.80	—26.00T—	—	12.00T	4.00T		
San Francisco.....	.....	0.75	0.85	0.85	20.00 to 25.00	—	11.50	.....	
Sydney.....	.....	21.00T	.....	.....	—21.00T—	—	18.00T	.....	
Calcutta.....	.....	.....	.....	.....	.....	.....	.....	.....

T—ton.

†Landed.

††Heavy products limited in strength.

*Extra charge for wharfage.

Principal Rates To and From United Kingdom

	s	d		s	d
Grain, River Plate to United Kingdom.....	35	0	Coal, South Wales to Buenos Aires.....	13	6
Coal, South Wales to Near East.....	14	0	Iron ore, Bilbao to Middlesbrough.....	7	0
Coal, Newcastle to France.....	7	6	General British market, six months time charters, per ton per month.....	5	0

Bunker Prices

At New York				At Philadelphia				Other Ports	
	Coal alongside per ton	Fuel oil 16 baume per barrel	Diesel oil gravity 25-30 per gallon		Coal per ton	Fuel oil 16 baume per barrel	Diesel oil gravity 25-30 per gallon		
Jan. 8, 1920	\$7.00	\$2.94	10 cents	Jan. 10, '20	\$9.45	\$2.08	.....	Boston coal, per ton,	\$7.55
Apr. 6.....	6.40 @ 6.75	1.95	6.5 cents	Apr. 7.....	5.75 @ 6.00	1.98	5.7 cents	Boston oil, per barrel	1.62
July 8.....	5.75 @ 6.25	1.45	4.25 @ 5.25 cents	July 7.....	4.90 @ 5.45	1.47½	4.5 cents	Cardiff coal, per ton.	17s
Oct. 4.....	5.85 @ 6.15	1.45	4.25 @ 5.25 cents	Oct. 6.....	*6.10 @ 6.25	1.80	4.00 @ 4.25 cents	London coal, per ton.	22s
Dec. 3.....	5.60 @ 6.10	1.60	5.00 @ 6.00 cents	Dec. 7.....	*5.50 @ 5.70	1.68	4.75 @ 6.00 cents	Antwerp coal, per ton	25s
Jan. 9, 1921	5.50 @ 5.90	1.25	4.40 @ 5.50 cents	Jan. 9, '21	*5.10 @ 5.35	1.50	4.50 @ 5.00 cents		

*Trimmed in.

Imports increased heavily due partly to the arrival of many ships during the month but principally to the policy of the Boston & Maine railroad terminal in establishing a 15-day free period.

The direct line between South America and Boston has proved exceptionally successful and this is regarded with unusual interest in New England because it is the first direct permanent service with South America that the port has ever enjoyed. Coastwise shipping has held up well and in fact is said by one authority to be the only service out of Boston which has shown a profit throughout the year. Rates at present are unsettled with individual quotations being made freely.

The strike at Portland has been settled and winter

traffic there is now under full swing. Manufacturing in New England still continues quiet, but Boston is gaining slowly in its share of the district's export trade. Some new lines have been announced. However, these mostly have been reorganizations and are without particular significance. Robert B. Mount, Boston, in taking over the Globe line announces, that routes now operating from New York will be extended to Boston later. Rogers & Webb, Boston, announces the intention to operate a new service between Boston and Brazil. The Canadian Pacific railroad started a direct passenger and freight service between Boston and Havana late in the year, and reports that this service will be maintained by the steamer SICILIAN.

British Shipowners See Improvement

From Our European Manager

London, Jan. 10.—(By cable)—British shipowners enter the new year holding slight hope of quick improvement in shipping conditions. But guided by their experiences in 1921, the shipowners believe that an improvement is under way which will rank the new year ahead of last. Lloyds report 1,524,000 gross tons of ships launched last year. Only 54,900 tons were commenced in the last quarter, while on Dec. 31 about 2,640,000 tons were being built. This figure includes

722,000 tons suspended so that the new year starts with shipyards handling about 1,800,000 tons less than a year ago. Some north Atlantic grain is being carried at 4 shillings per quarter. Grain quotations from the River Plate are higher and that trade is active but in other lines the demand is slack. Rates on coal are quite low, to Java bringing 20 shillings. General cargo rate from Alexandria to United Kingdom is 9s 6d. The outbound coal movement is heavy.

Assigned Shipping Board Vessels

DETROIT WAYNE, 4155 tons, chartered bareboat basis Halschaw Steamship Line, Inc.; withdraw division of operations managing caretaker.

INDIANA HARBOR, 4155 tons, assigned Baltimore Steamship Co. managing agent; withdraw division of operations managing caretaker.

CASPAR, 7825 tons, assigned International Freightage Corp. managing agent; withdraw division of operations managing caretaker.

OLEN, 7840 tons, assigned Cosmopolitan Shipping Co. managing agent; withdraw division of operations managing caretaker.

KENOWIS, 7840 tons, assigned Munson Steamship Line managing agent; withdraw division of operations managing caretaker.

HUGUENOT (tanker), 10,387 tons, assigned McAllister Bros. management operation; withdraw division of operations managing caretaker.

WATERTOWN (tanker), 9298 tons, assigned Columbus Shipping Co. management operation; withdraw division of operations managing caretaker.

HOVEN (tanker), 10,387 tons, assigned Walker & Daly management operation; withdraw division of operations managing caretaker.

QUABBIN (tanker), 9863 tons, assigned Walker & Daly management operation; withdraw division of operations managing caretaker.

DANVILLE (tanker), 6008 tons, assigned division of operations, New Orleans, management operation; withdraw management operation McAllister Bros.

ENDICOTT, 9704 tons, assigned Barber Steamship Lines managing agent; withdraw division of operations managing caretaker.

LAKE CHELAN, 2492 tons, assignment division of operations managing caretaker canceled; remains Halschaw Steamship Line Inc., bareboat charter.

INDEPENDENCE HALL, 7825 tons, assigned Cosmopolitan Shipping Co., managing agent; withdraw division of operations managing caretaker.

EASTERN COAST, 6300 tons, assigned Susquehanna Steamship Co., managing agent; withdraw division of operations managing caretaker.

VICTORIOUS, 11,868 tons, assigned Black Diamond Steamship Corp., managing agent; withdraw division of operations managing caretaker.

LAKE HEMBRIE, 8583 tons, assigned the Carolina Co., managing agent; withdraw division of operations managing caretaker.

EDGEHILL, 10,024 tons, assigned Black Diamond Steamship Corp., managing agent; withdraw division of operations managing caretaker.

ANTIETAM (tanker), 10,238 tons, assigned Walker & Daly management operation; withdraw division of operations managing caretaker.

MEVANIA (tanker), 9826 tons, assigned Walker & Daly management operation; withdraw division of operations managing caretaker.

DUNGANNON (tanker), 10,078 tons, assigned McAllister Bros. management operation; withdraw division of operations managing caretaker.

TRIMOUNTAIN (tanker), 9100 tons, assigned McAllister Bros. management operation; withdraw division of operations managing caretaker.

HALO (tanker), 10,078 tons, assigned Columbus Shipping Co. management operation; withdraw division of operations managing caretaker.

ROMULUS (tanker), 7540 tons, assigned Columbus Shipping Co. management operation; withdraw division of operations managing caretaker.

KEKOSKEE (tanker), 7540 tons, assigned Columbus Shipping Co. management operation; withdraw division of operations managing caretaker.

EASTERN BREEZE, 6636 tons, assigned Moore & McCormick Co., Inc., managing agent; withdraw Emergency Fleet corporation, managing caretaker.

COAXER, 9431 tons, assignment Emergency Fleet corporation, managing caretaker canceled; remains Pacific Steamship Co., managing agent.

POCAHONTAS, 10,550 tons, cancel previous advices, dated Sept. 7, 1921, that this steamer was assigned to United States Lines. This steamer has

never been accepted by the United States Lines, but was delivered by the receivers of the United States Mail Steamship Co. to the shipping board on Sept. 1, 1921, and since then has been operated by the board.

CORSON, 7825 tons, assigned Kerr Steamship Co., Inc., managing agent; withdraw Emergency Fleet corporation, managing caretaker.

PUGET SOUND, 7482 tons, assigned Export Transportation Co. managing agent; withdraw Emergency Fleet corporation, managing caretaker.

HUDSONIAN, tanker, 11,700 tons, assigned Columbus Shipping Co. management operation; withdraw Emergency Fleet corporation, managing caretaker.

RAPIDAN, tanker, 11,375 tons, assigned McAllister Bros. management operation; withdraw Emergency Fleet corporation managing caretaker.

WEST CRESSEY, 8595 tons, assigned Trosdal, Plant & LaFonta, managing agent; withdraw Emergency Fleet corporation, managing caretaker.

ARCTURUS, 9601 tons, assigned Kerr Steamship Co., Inc., managing agent; withdraw Emergency Fleet corporation, managing caretaker.

LAKE STRYMON, 4145 tons, assignment Emergency Fleet corporation managing caretaker canceled; assigned Clyde Steamship Co., managing agent; withdraw managing agency Mallory Steamship Co.

ROMULUS, tanker, 7540 tons, assignment Columbus Shipping Co., management operations canceled; assigned Emergency Fleet corporation, New Orleans, management operation; withdraw Emergency Fleet corporation, managing caretaker.

SAPULPA, tanker, 9758 tons, assigned Columbus Shipping Co., management operation; withdraw Emergency Fleet corporation, managing caretaker.

WEST FARALON, 10,950 tons, assigned Struthers & Berry, managing agent; withdraw managing agency, Williams, Dimond & Co.

EASTERN CRAG, 6300 tons, assigned Cosmopolitan Shipping Co., managing agent; withdraw Emergency Fleet corporation, managing caretaker.

LAKE CRESCENT, 2875 tons, chartered bareboat basis, Munson Steamship Line; withdraw Emergency Fleet corporation, managing caretaker.

ELKTON, 9693 tons, assigned Barber Steamship Lines, Inc., managing agent; withdraw Emergency Fleet corporation, managing caretaker.

HUMRICK, tug, assigned Emergency Fleet corporation, operating department, Norfolk, managing operation; withdraw Emergency Fleet corporation, managing caretaker.

SAGAPORACK, 7825 tons, assigned A. H. Bull & Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST HEMATITE, 8556 tons, assigned Cosmopolitan Shipping Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

EASTERN TEMPEST, 6694 tons, assigned Moore & McCormick, managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST NOSSKA, 8635 tons, assigned Export Transportation Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

HICKMAN, 7323 tons, assigned Kerr Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

DALLAS, 7323 tons, assigned Kerr Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

CHAPPAQUA, 7435 tons, assigned Kerr Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST CAMPGAW, 8591 tons, assigned United American Lines, managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST ELDARA, 8560 tons, assigned Cosmopolitan Shipping Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

ELMSPORT, 10,014 tons, assigned Black Diamond Steamship Corp., managing agent; withdraw Emergency Fleet corporation managing caretaker.

SCHODACK, 7825 tons, assignment Emergency

Fleet corporation managing caretaker canceled; assigned Cosmopolitan Shipping Co., managing agent; withdraw managing agency Barber Steamship lines.

WEST KEDRON, 8565 tons, assigned Trosdal, Plant & LaFonta, managing agent; withdraw Emergency Fleet corporation managing caretaker.

LAKE FLORAVISTA, 4145 tons, chartered bareboat basis, New York & Cuba Mail Steamship Co.; withdraw managing agency New York & Cuba Mail Steamship Co.

WEST CELERA, 8584 tons, assignment Emergency Fleet corporation managing caretaker canceled; assigned General Steamship Corp. managing agent.

FLUORSPAR, 7825 tons, assigned Tampa Inter-Ocean Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

EASTERN CROSS, 6799 tons, assigned Susquehanna Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

WESTERN OCEAN, 8800 tons, assigned Trosdal, Plant & LaFonta, managing agent; withdraw Emergency Fleet corporation managing caretaker.

EVERGREEN CITY, 8727 tons, assigned Lykes Bros., managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST SAGINAW, 8583 tons, assigned A. H. Bull & Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST CADDOA, 8584 tons, assigned Strachan Shipping Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

EFFINGHAM, 9694 tons, assigned Waterman Steamship Co., managing agent; withdraw Emergency Fleet corporation managing caretaker.

HIGHO, 7630 tons, assignment Emergency Fleet corporation managing caretaker canceled; assigned Trosdal, Plant & LaFonta managing caretaker; withdraw managing agency C. D. Mallory & Co.

CHESTER VALLEY, 7840 tons, assignment Emergency Fleet corporation managing caretaker canceled; assigned Lykes Bros. managing agent; withdraw managing agency Oriental Navigation Co.

BLUE TRIANGLE, 7825 tons, assigned North Atlantic & Western Steamship Co. managing agent; withdraw managing agency A. H. Bull & Co.

COCKESIT, 9426 tons, assigned Lykes Bros. managing agent; withdraw Emergency Fleet corporation managing caretaker.

WEST JAPPA, 8747 tons, assignment Emergency Fleet corporation managing caretaker canceled; assigned Pacific Steamship Co. managing agent; withdraw managing agency Frank Waterhouse & Co.

HOG ISLAND, 7840 tons, assignment Emergency Fleet corporation managing caretaker canceled; remains Export Steamship Co. managing agent.

WESTERN OCEAN, 8800 tons, assigned Lykes Bros. managing agent; withdraw managing agency Trosdal, Plant & LaFonta.

BEARPORT, 9422 tons, assigned Columbia Pacific Shipping Co. managing agent; withdraw Emergency Fleet corporation managing caretaker.

MONTAGUE, 9418 tons, assigned Columbia Pacific Shipping Co. managing agent; withdraw Emergency Fleet corporation managing caretaker.

LAFCOMA, 7825 tons, assigned Mississippi Shipping Co. managing agent; withdraw Emergency Fleet corporation managing caretaker.

HANOVER, 10,375 tons, assigned Tampa Inter Ocean Steamship Co. managing agent; withdraw Emergency Fleet corporation managing caretaker.

EASTERN EXPORTER, 9103 tons, assigned Trosdal, Plant & LaFonta managing agent; withdraw Emergency Fleet corporation managing caretaker.

BRAVE COVER, 9702 tons, assigned Lykes Bros. managing agent; withdraw Emergency Fleet corporation managing caretaker.

BELVIDERE, 7249 tons, assigned Lykes Bros. managing agent; withdraw Emergency Fleet corporation managing caretaker.

1921 Construction Record of U.S. Yards

Complete Tabulation Showing Vessels Delivered and Launched

AMERICAN BRIDGE CO., PITTSBURGH							
Name or Yard No.	Name and Address of Owner	Type of vessel	Gross Tonnage	Speed Knots	Length, Breadth and Depth, Feet	I. H. P.	Date Launched
25 Barges	Carnegie Steel Co.	Coal	475	....	175-0 x 26-0 x 11-0	....	Mar. to Dec.
2 Barges	DeBardeleben Coal Co.	Coal	475	....	175-0 x 26-0 x 11-0	....	Nov.
2 Barges	W. G. Coyle & Co.	Coal	475	....	175-0 x 26-0 x 11-0	....	July
6 Barges	Quartermaster U. S. Army	Coal	410	....	145-0 x 24-0 x 12-0	....	May & June
3 Carfloats	New York Dock Railway Co.	.....	940	....	285-0 x 38-0 x 10-6	....	July & Aug.
30 Barges	LaBelle Iron Works	Coal	350	....	140-0 x 26-0 x 9-0	....	Jan. & Feb.
2 Barges	Mexican Petroleum Corp.	Bulk Oil	525	....	150-0 x 36-0 x 10-6	....	Jan.
2 Barges	Gulf Refining Co.	Bulk Oil	740	....	175-0 x 40-0 x 11-0	....	Jan.

ANCHOR SHIPBLDG. CO., WASHBURN, WIS.							
Anchor Shipbuilding Co.	Hudson Athens Ferry Co.	Motor Ferry	500	10	115-0 x 33-0 x 12-0	300	July 4th

BALTIMORE DRY DOCKS & SHIPBLDG. CO., BALTIMORE							
District of Columbia	U. S. Shipping Board	Tanker	7641	10	430-0 x 59-0 x 33-3	2650	12-18-20
Tuxpanoil	U. S. Shipping Board	Tanker	7246	10	430-0 x 59-0 x 33-3	2650	4-26-21
Tulsagas	U. S. Shipping Board	Tanker	7246	10	430-0 x 59-0 x 33-3	2650	4-30-21
Lio	U. S. Shipping Board	Tanker	7246	10	430-0 x 59-0 x 33-3	2650	6-4-21
Warwick	U. S. Shipping Board	Tanker	4469	10	340-0 x 49-0 x 28-7	1800	11-20-20
S. O. Co. No. 7	Standard Oil Co. of N. J.	Tanker	293	8½	140-0 x 28-0 x 8-0	400	7-9-21

BATH IRON WORKS, BATH, ME.							
Thomas P. Beal	Crowell & Thurlow S. S. Co.	Freighter	6250	10	395-5 x 55-0 x 34-5	2200	6-16-21

BETHLEHEM SHIPBUILDING CORP. LTD., BETHLEHEM, PA. (shaft)							
Hammac	U. S. Government	Tanker	6900	11	435-0 x 56-0 x 34-0	2600	5-25-21
Crampton Anderson	Pan American Pet. Co.	Tanker	7244	11	435-0 x 56-0 x 34-0	2700	11-30-20
Voba Linda	General Petroleum Co.	Tanker	7230	11	435-0 x 56-0 x 34-0	2700	11-22-20
Frank G. Drum	Associated Oil Co.	Tanker	7013	11	435-0 x 56-0 x 34-0	2700	2-18-21
K. Y. Kingsbury	Standard Oil Co. of Calif.	Tanker	7251	11	440-0 x 58-0 x 41-0	3000	2-7-21
Hambro	U. S. Government	Tanker	7200	11	435-0 x 56-0 x 34-0	2600	4-15-21
Hamer	U. S. Government	Tanker	6900	11	435-0 x 56-0 x 34-0	2600	5-21-21
F. H. Hilliman	Standard Oil Co. of Calif.	Tanker	10614	11½	500-0 x 68-0 x 38-0	3200	7-28-21
Indian Arrow	Standard Transportation Co.	Tanker	8327	11	468-0 x 62-0 x 39-0	3200	1-28-21
Java Arrow	Standard Transportation Co.	Tanker	8327	11	468-0 x 62-0 x 39-0	3200	4-30-21
Agwibay	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8327	11	468-0 x 62-0 x 39-0	3200	5-25-21
J. Fletcher Farrell	Sinclair Nav. Co.	Tanker	6600	11	430-0 x 59-0 x 33-0	2600	6-10-21
Wm. Boyce Thompson	Sinclair Nav. Co.	Tanker	6600	11	430-0 x 59-0 x 33-0	2600	7-8-21
Albert E. Watts	Sinclair Nav. Co.	Tanker	7137	11	430-0 x 59-0 x 33-0	2700	12-28-20
E. R. Kemp	Sinclair Nav. Co.	Tanker	4887	10½	375-0 x 53-0 x 28-0	2300	2-12-21
E. W. Sinclair	Sinclair Nav. Co.	Tanker	4887	10½	375-0 x 53-0 x 28-0	2300	4-26-21
Hawkeye State	U. S. Government	Passenger	14123	16	535-0 x 72-0 x 41-0	12000	4-17-20
Agwilake	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8367	11	468-0 x 62-0 x 39-0	3200	12-11-20
Alladdin	Standard Transportation Co.	Tanker	6882	11	435-0 x 56-0 x 34-0	2800	2-5-21
Agwipond	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8367	11	468-0 x 62-0 x 39-0	3200	2-19-21
Buckeye State	U. S. Government	Passenger	14123	16	535-0 x 72-0 x 41-0	12000	7-24-20
Henry Deutsch de Murthe	Lux Navigation Co.	Tanker	5530	11	412-0 x 53-0 x 31-0	2600	3-12-21
Emil Deutsch La Murthe	Lux Navigation Co.	Tanker	5530	11	412-0 x 53-0 x 31-0	2600	4-16-21
G. Harrison Smith	International Petroleum Co.	Oil & Ore	14700	11½	550-0 x 72-0 x 44-0	4600	7-12-21
Utica Socony	Standard Oil Co. of N. Y.	Oil Barge	400	8½	150-0 x 28-0 x 12-0	300	11-11-20
Ilororo	Ind. Prod. Steamship Co.	Refrig.	1500	10	254-0 x 40-0 x 18-0	750	10-14-20
Aquidaban	Ind. Prod. Steamship Co.	Refrig.	1500	10	254-0 x 40-0 x 18-0	750	10-30-20
No. 10	Western Maryland Railroad	Carfloat	772	..	345-0 x 42-0 x 12-0	....	1-26-21
No. 11	Western Maryland Railroad	Carfloat	772	..	345-0 x 42-0 x 12-0	....	2-17-21
H. M. Storey	Standard Oil Co. of Calif.	Tanker	10614	11½	500-0 x 68-0 x 38-0	3200	9-28-21
W. S. Rheem	Standard Oil Co. of Calif.	Tanker	10614	11½	500-0 x 68-0 x 38-0	3200	10-28-21
Pine Tree State	U. S. Government	Passenger	14123	16	535-0 x 72-0 x 41-0	12000	3-19-21
Palmetto State	U. S. Government	Passenger	14123	16	535-0 x 72-0 x 41-0	12000	6-4-21
Nutmeg State	U. S. Government	Passenger	14123	16	535-0 x 72-0 x 41-0	12000	9-17-21
Bethore	Ore Steamship Co.	Ore & Oil	15000	11½	550-0 x 72-0 x 44-0	4600	12-3-21
Torrent	City of Baltimore	Fire Boat	10300	10	450-0 x 59-0 x 33-0	2650	10-22-21
Macy Willis	City of Baltimore	Tanker	10300	10	450-0 x 59-0 x 33-0	2650	11-22-21

BRITISH COLUMBIA MARINE ENGRS. & SHIPBUILDERS, LTD., VANCOUVER, B. C.							
Lady Kindersley	Hudson's Bay Co.	Schooner	714	7	192-0 x 36-3 x 15-0	320 BHP (Semi Diesel)	3-28-21

COLLINGWOOD SHIPBLDG. CO., LTD., COLLINGWOOD, ONT.							
Canadian Coaster	Canadian Government Department of Marine	Cargo	2422	8	251-0 x 43-6 x 26-0	1000	5-12-21
Canadian Pathfinder	Canadian Government Department of Marine	Cargo	2373	9	251-0 x 43-6 x 24-2	1100	5-12-21
Canadian Engineer	Canadian Government Department of Marine	Cargo	2281	9	251-0 x 43-6 x 24-2	1100	6-30-21

COWLES SHIPYARD CO., BUFFALO, N. Y.							
.....	Cowles Shipyard Co.	Derrick	...	..	100-0 x 34-0 x 6-0	....	12-31-21

DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.							
Lieut. Col. R. C. Gildart	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Maj. C. A. Lohr	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Maj. L. E. Moreton	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Maj. A. G. Jenkins	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Maj. W. P. Pence	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Capt. C. M. Condon	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Capt. J. W. Mc Kie	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21
Lieut. Col. H. C. Schumm	U. S. Government	Mine Planter	350	12	100-0 x 22-0 x 12-0	350	6-30-21

JOHN DOUGLASS, JACKSONVILLE, FLA.							
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21
.....	American Cuban Steamship Co., N. Y. City	Deck Scow	500	....	110-0 x 32-0 x 9-0	....	5-1-21

DOULLUT & WILLIAMS SHIPBLDG. CO., INC., NEW ORLEANS							
S. S. Wichita	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	3-17-20
S. S. City of Elwood	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	4-10-20
S. S. Jeff Davis	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	10-30-20
S. S. Galveston	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	12-18-20
S. S. Ward	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	1-22-21
S. S. Oldham	U. S. Shipping Board	Cargo	9600	11	412-3 x 55-0 x 34-11	2800	3-19-21

1921 Construction Record of U.S. Yards

Complete Tabulation Showing Vessels Delivered and Launched

DRAVO CONTRACTING CO., PITTSBURGH

Name or Yard No.	Name and Address of Owner	Type of vessel	Gross Tonnage	Speed Knots	Length, Breadth and Depth, Feet	I. H. P.	Date Launched
No. 37		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	1-10-21
No. 40		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	1-12-21
No. 1		Steel Hull	160	.....	136-0 x 29-0 x 5-6	.....	3-14-21
No. 3		Ladder Dredge	500	.....	120-0 x 60-0 x 10-0	.....	5-27-21
No. 1		Oil Barge	352	.....	135-0 x 34-0 x 9-0	.....	7-19-21
No. 2		Oil Barge	352	.....	135-0 x 34-0 x 9-0	.....	8-2-21
No. 9		Derrick Boat	430	.....	110-0 x 45-0 x 7-6	.....	8-19-21
No. 3		Oil Barge	352	.....	135-0 x 34-0 x 9-0	.....	8-27-21
No. 1		Dump Scow	570	.....	144-0 x 37-0 x 11-8	.....	10-7-21
No. 41		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	10-7-21
No. 42		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	10-14-21
No. 2		Dump Scow	570	.....	144-0 x 37-0 x 11-8	.....	10-20-21
No. 43		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	10-21-21
No. 44		Sand Barge	300	.....	135-0 x 27-0 x 7-6	.....	10-28-21
No. 105		Deck Barge	125	.....	102-0 x 24-0 x 6-6	.....	11-3-21
No. 106		Deck Barge	125	.....	102-0 x 24-0 x 6-6	.....	11-9-21
No. 3		Dump Scow	570	.....	144-0 x 37-0 x 11-8	.....	11-14-21
No. 107		Deck Barge	125	.....	102-0 x 24-0 x 6-6	.....	11-17-21
No. 4		Dump Scow	570	.....	144-0 x 37-0 x 11-8	.....	12-9-21
No. 3		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	4-26-21
No. 3		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	5-9-21
No. 3		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	5-16-21
No. 6		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	5-23-21
No. 7		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	5-31-21
No. 8		Oil Barge	160	.....	100-0 x 30-0 x 5-6	.....	6-18-21
No. 1		Molasses Barge	180	.....	100-0 x 30-0 x 7-0	.....	9-6-21
No. 2		Molasses Barge	180	.....	100-0 x 30-0 x 7-0	.....	9-12-21

FEDERAL SHIPBLDG. CO., NEWARK, N. J.

Steel Seafarer	United States Steel Products Co.	Cargo	5718	12	425-0 x 56-0 x 30-0	3100	10-18-21
Steel Scientist	United States Steel Products Co.	Cargo	5718	12	425-0 x 56-0 x 30-0	3100	11-17-21
Steel Navigator	United States Steel Products Co.	Cargo	5718	12	425-0 x 56-0 x 30-0	3100	12-17-21
Vancolite	Standard Oil Co., (N. J.)	Tanker	10396	11	500-0 x 68-0 x 38-9	3500	3-24-21
Walter Jennings	Standard Oil Co., (N. J.)	Tanker	10396	11	500-0 x 68-0 x 38-9	3500	2-9-21
E. T. Bedford	Standard Oil Co., (N. J.)	Tanker	10396	11	500-0 x 68-0 x 38-9	3500	5-17-21
Vicrolite	Standard Oil Co., (N. J.)	Tanker	10396	11	500-0 x 68-0 x 38-9	3500	6-14-21
J. A. Moffett Jr.	Standard Oil Co., (N. J.)	Tanker	10396	11	500-0 x 68-0 x 38-9	3500	7-14-21
M. P. 21	Mexican Petroleum Co.	Barge	521	.....	150-0 x 36-0 x 10-6	.....	1-20-21
M. P. 22	Mexican Petroleum Co.	Barge	521	.....	150-0 x 36-0 x 10-6	.....	1-3-21
M. P. 23	Mexican Petroleum Co.	Barge	521	.....	150-0 x 36-0 x 10-6	.....	2-7-21
C. B. 7	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	5-14-21
C. B. 8	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	5-23-21
C. B. 9	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	5-27-21
C. B. 10	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	5-31-21
C. B. 11	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	6-8-21
C. B. 12	Quartermaster's Corp., U. S. Army	Barge	369	.....	145-0 x 24-0 x 12-0	.....	6-9-21
N. Y. Dock Railway	10 New York Dock Railway	Carfloat	850	.....	285-0 x 38-0 x 10-6	.....	7-29-21
N. Y. Dock Railway	11 New York Dock Railway	Carfloat	850	.....	285-0 x 38-0 x 10-6	.....	8-11-21
N. Y. Dock Railway	12 New York Dock Railway	Carfloat	850	.....	285-0 x 38-0 x 10-6	.....	8-19-21

GLOBE SHIPBLDG. & DRY DOCK CO., BALTIMORE

S. S. San Leopoldo	Eagle Oil Transport Co., Ltd.	Tanker	8168	11	401-0 x 54-0 x 32-10	2800	6-25-21
S. S. San Leonardo	Eagle Oil Transport Co., Ltd.	Tanker	8248	11	401-0 x 54-0 x 32-10	2800	7-30-21

GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICH.

Delphine	Mrs. H. E. Dodge, Detroit	Steam Yacht	1255	16.5	250-5 x 35-5 x 22-0	3000	4-2-21
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HALIFAX SHIPYARDS, LTD., HALIFAX, NOVA SCOTIA

Canadian Cruiser	Canadian Govt. Merchant Marine	Cargo	7177.64	12	430-0 x BP x 56-0	3,200	7-9-21
Canadian Constructor	Canadian Govt. Merchant Marine	Cargo	7177.64	.....	430-0 x BP x 56-0	3,200	9-24-21

JOHNSON IRON WORKS DRYDOCK & SHIPBLDG. CO., INC., NEW ORLEANS

.....	Builders' Account	Steel Barge	225	.....	118-0 x 29-0 x 7-0	.....	8-4-21
.....	New England Fuel Oil Co.	Steel Barge	648.22	.....	200-0 x 42-0 x 8-3	.....	4-21-21
.....	New England Fuel Oil Co.	Steel Barge	648.22	.....	200-0 x 42-0 x 8-3	.....	7-21-21
.....	New England Oil Corp.	Steel Barge	619	.....	200-0 x 40-0 x 8-0	.....	3-15-21
.....	New England Oil Corp.	Steel Barge	619	.....	200-0 x 40-0 x 8-0	.....	3-15-21
.....	New England Oil Corp.	Steel Barge	619	.....	200-0 x 40-0 x 8-0	.....	3-15-21
.....	Gulf Refining Co.	Steel Barge	105	.....	100-0 x 22-0 x 5-0	.....	6-16-21
.....	Gulf Refining Co.	Steel Barge	105	.....	100-0 x 22-0 x 5-0	.....	6-16-21
.....	Builders' Account	Barge	225	.....	118-0 x 29-0 x 7-0	.....	10-12-21

KELLEY-SPEAR CO., BATH, ME.

Barnstable	Staples Transportation Co., Fall River, Mass.	Schooner	1626	.....	244-8 x 41-1 x 20-2	.....	6-6-21
Bourne	Staples Transportation Co., Fall River, Mass.	Ocean Barge	1626	.....	244-8 x 41-1 x 20-2	.....	7-9-21

LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

S-48	U. S. Government	Submarine	.....	.....	.....	.....	2-26-21
S-49	U. S. Government	Submarine	.....	.....	.....	.....	4-23-21
S-50	U. S. Government	Submarine	.....	.....	.....	.....	6-18-21
S-51	U. S. Government	Submarine	.....	.....	.....	.....	8-20-21

LOS ANGELES SHIPBLDG. & DRYDOCK CO., SAN PEDRO, CAL.

West Lewark	U. S. Shipping Board	Freighter	11000	12	445-9 x 38-3 x 54-0	3500	2-24-21
West Taron	U. S. Shipping Board	Freighter	11000	12	445-9 x 38-3 x 54-0	3500	4-19-21
West Greylock	U. S. Shipping Board	Freighter	11000	12	445-9 x 38-3 x 54-0	3500	6-15-21
West Prospect	U. S. Shipping Board	Freighter	11000	12	445-9 x 38-3 x 54-0	3500	7-30-21
West Chopaka	U. S. Shipping Board	Freighter	11000	12	445-9 x 38-3 x 54-0	3500	9-19-21

MCDUGALL-DULUTH SHIPBLDG. CO., DULUTH, MINN.

I. L. I. 101	Interwaterways Line Inc.	Motor Barge	1040	6½	254-0 x 36-0 x 14-0	.....	.....
I. L. I. 102	Interwaterways Line Inc.	Motor Barge	1040	6½	254-0 x 36-0 x 14-0	.....	.....
I. L. I. 103	Interwaterways Line Inc.	Motor Barge	1040	6½	254-0 x 36-0 x 14-0	.....	.....
I. L. I. 104	Interwaterways Line Inc.	Motor Barge	1040	6½	254-0 x 36-0 x 14-0	.....	.....
I. L. I. 105	Interwaterways Line Inc.	Motor Barge	1040	6½	254-0 x 36-0 x 14-0	.....	.....

1921 Construction Record of U.S. Yards

Complete Tabulation Showing Vessels Delivered and Launched

MAIN IRON WORKS, SAN FRANCISCO							
Name or Yard No.	Name and Address of Owner	Type of Vessel	Gross Tonnage	Speed Knots	Length, Breadth and Depth, Feet	I. H. P.	Date Launched
Sea Lion	Ship Owners & Merchants Tug Boat Co.	Ocean Tug	473	12	150-0 x 30-0 x 17-0	1000	.....
Sea Monarch	Ship Owners & Merchants Tug Boat Co.	Ocean Tug	473	12	150-0 x 30-0 x 17-0	1000	.....
Sea Ranger	Ship Owners & Merchants Tug Boat Co.	Ocean Tug	473	12	150-0 x 30-0 x 17-0	1000	.....
Sea Scout	Ship Owners & Merchants Tug Boat Co.	Ocean Tug	473	12	150-0 x 30-0 x 17-0	1000	.....
S. S. Thomas Rolph	Geo. E. Billings	Double end cargo	473	12	150-0 x 30-0 x 17-0	1000	.....
MARIETTA MFG. CO., POINT PLEASANT, W. VA.							
Str. St. Louis	Inland & Coastwise Waterways Service	Towboat	760	.....	200-0 x 40-0 x 10-0	1800	2-12-21
Str. Cario	Inland & Coastwise Waterways Service	Towboat	760	.....	200-0 x 40-0 x 10-0	1800	3- 9-21
Str. Memphis	Inland & Coastwise Waterways Service	Towboat	760	.....	200-0 x 40-0 x 10-0	1800	11-19-21
Str. Baton Rouge	Inland & Coastwise Waterways Service	Towboat	760	.....	200-0 x 40-0 x 10-0	1800	11-21-21
Str. Illinois	U. S. Government	Towboat	1508	.....	265-0 x 58-0 x 9-6	1400	11- 5-20
Str. Minnesota	U. S. Government	Towboat	1508	.....	265-0 x 58-0 x 9-6	1400	4-14-21
Barge Klondyke	Aluminum Co. of America	Ore Carrier	3100	.....	225-0 x 42-6 x 15-0	.....	3- 9-21
Str. Opon	Tropical Oil Co. of South America	Towboat	100	.....	76-6 x 26-0 x 4-6	200	.....
Str. Carare	Tropical Oil Co. of South America	Towboat	283	.....	160-0 x 40-0 x 5-0	400	.....
Str. Guayabito	Tropical Oil Co. of South America	Towboat	283	.....	160-0 x 40-0 x 5-0	400	.....
MERCHANT SHIPBLDG. CORP., CHESTER, PA.							
Mount Carroll	Shawmut Steamship Co.	Pass. Freighter	7469	13	440-0 x 57-0 x 39-0	4200	1-10-21
Mount Clinton	Shawmut Steamship Co.	Pass. Freighter	7509	13	444-0 x 57-0 x 39-0	4200	2- 8-21
Puente	Union Oil Co.	Oil Tanker	6817	10.5	439-7 x 58-0 x 33-0	3000	4-28-21
Playa	Union Oil Co.	Oil Tanker	6816	10.5	439-7 x 58-0 x 33-0	3000	6- 4-21
Robert E. Hopkins	Tide Water Oil Co.	Oil Tanker	6817	10.5	439-7 x 58-0 x 33-0	3000	8- 6-21
Samuel Q. Brown	Tide Water Oil Co.	Oil Tanker	6117	10.5	439-7 x 58-0 x 33-0	3000	10-15-21
Californian	American-Hawaiian Steamship Co.	Freighter	7500	.....	461-7½ x 59-8 x 39-0	4500	11-14-21
Missourian	American-Hawaiian Steamship Co.	Freighter	7500	.....	461-7½ x 59-8 x 39-0	4500	12-14-21
J. Hampton Moore	City of Philadelphia	Fire Boat	.....	.....	129-9 x 28-0 x 12-9	750	12-20-21
MIDLAND SHIPBLDG. CO., LTD., MIDLAND, ONT.							
No. 10	Department of Marine, Ottawa, Can.	Freighter	2429.39	11	251-0 x 43.66 x 26.08	1300	6- 8-21
NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.							
Agwistone	Atlantic Gulf & West Indies Steamship Lines	Oil Tanker	10398	.....	.....	3000	.....
Agwismith	Atlantic Gulf & West Indies Steamship Lines	Oil Tanker	10398	.....	.....	3000	.....
John D. Archbold	Standard Oil Co. (N.J.)	Oil Tanker	14054	.....	.....	3800	.....
Wm. Rockefeller	Standard Oil Co. (N.J.)	Oil Tanker	14054	.....	.....	3800	.....
West Virginia	United States Navy	Battleship	.....	.....	.....	.....	.....
Golden State	U. S. Shipping Board	Frt. & Pass.	14123	.....	.....	12000	.....
Silver State	U. S. Shipping Board	Frt. & Pass.	14123	.....	.....	12000	.....
Maryland	United States Navy	Battleship	.....	.....	.....	.....	.....
NEW YORK SHIPBLDG. CORP., CAMDEN, N.J.							
Wenatchee	U. S. Shipping Board	Pass. & Cargo	14,127	17½	535-0 x 72-0 x 50-0	12,000*	5-24-19
Southern Cross	U. S. Shipping Board	Pass. & Cargo	13,741	17½	535-0 x 72-0 x 50-0	12,000*	7-20-19
American Legion	U. S. Shipping Board	Pass. & Cargo	13,736	17½	535-0 x 72-0 x 50-0	12,000*	10-11-19
Bay State	U. S. Shipping Board	Pass. & Cargo	14,187	17½	535-0 x 72-0 x 50-0	12,000*	7-17-20
Keystone State	U. S. Shipping Board	Pass. & Cargo	14,127	17½	535-0 x 72-0 x 50-0	12,000*	5-15-20
Empire State	U. S. Shipping Board	Pass. & Cargo	14,127	17½	535-0 x 72-0 x 50-0	12,000*	8- 4-20
Lone Star State	U. S. Shipping Board	Pass. & Cargo	14,187	17½	535-0 x 72-0 x 50-0	12,000*	12-23-20
Hoosier State	U. S. Shipping Board	Pass. & Cargo	14,187	17½	535-0 x 72-0 x 50-0	12,000*	10-23-20
Granite State	U. S. Shipping Board	Pass. & Cargo	10,533	14	522-0 x 62-0 x 42-0	7,000	7-31-20
Wolverine State	U. S. Shipping Board	Pass. & Cargo	10,533	14	522-0 x 62-0 x 42-0	7,000	9-16-20
Centennial State	U. S. Shipping Board	Pass. & Cargo	10,558	14	522-0 x 62-0 x 42-0	7,000	12-11-20
Blue Hen State	U. S. Shipping Board	Pass. & Cargo	10,558	14	522-0 x 62-0 x 42-0	7,000	2-23-21
Camden	United Fruit Co.	Bulk Oil	6,870	11	419-3 x 56-3 x 33-4	3,000	11-24-20
Solana	Pacific Mail Steamship Co.	Bulk Oil	6,702	11	419-3 x 56-3 x 33-4	3,000	1-22-21
Yankee Arrow	Standard Transportation Co.	Bulk Oil	8,046	10½	468-0 x 62-6 x 39-6	3,200	4-10-21
Empire Arrow	Standard Transportation Co.	Bulk Oil	8,046	10½	468-0 x 62-6 x 39-6	3,200	5-24-21
Levant Arrow	Standard Transportation Co.	Bulk Oil	8,046	10½	468-0 x 62-6 x 39-6	3,200	7-25-21
Dixie Arrow	Standard Transportation Co.	Bulk Oil	8,046	10½	468-0 x 62-6 x 39-6	3,200	9-29-21
Munargo	Munson Steamship Co.	Pass. & Cargo	6,000	15½	414-0 x 57-6 x 34-6	5,800*	9-17-21
Eurana	Builders Acc't.	Bulk Oil	6,700	11	419-3 x 56-3 x 33-4	3,000	7-16-21
Peninsula State	U. S. Shipping Board	Pass. & Cargo	14,187	17½	535-0 x 72-0 x 50-0	12,000*	7- 6-21
NUNES BROS., SACRAMENTO, CAL.							
Nunes Bros.	Nunes Bros.	River Frt.	149	9	85-0 x 26-0 x 8-0	110	6-25-21
JAMES REES & SONS CO., PITTSBURGH							
La Belle	La Belle Iron Works	Tow Boat	310	15	148-0 x 28-4 x 5-6	900	1- -21
Ayacucho	.....	Frt. & Pass.	600	12	181-0 x 40-0 x 5-0	376	8- -21
RIEBOLDT, WOLTER & CO., STURGEON BAY, WIS.							
.....	Traverse City Transit Co.	Steam Barge	130	12	110-0 x 25-0 x 10-0	.....	5-11-21
GEORGE D. RYAN, OSHKOSH, WIS.							
Geo. D. Ryan	Fox River Navigation Co.	Tug	40	10	75-0 x 10-0 x 6-0	100	4- 4-21
Barge No. 4	Fox River Navigation Co.	Tow Barge	500	.....	142-0 x 24-0 x 7-0	.....	3-24-21
Barge No. 5	Fox River Navigation Co.	Tow Barge	500	.....	142-0 x 24-0 x 7-0	.....	3-30-21
SPEDDEN SHIPBLDG. CO., BALTIMORE							
S. O. Co. No. 5	Standard Oil Co., (N.J.)	Barge	962	.....	199-2 x 38-0 x 15-6	.....	5- 5-21
STANDARD SHIPBLDG. CORP., SHOOTERS ISLAND, N. Y.							
San Tiburcio	Eagle Oil Transport Co.	Oil Tanker	5874	11	412-0 x 53-0 x 31-0	2850	1-29-21
San Ubaldo	Eagle Oil Transport Co.	Oil Tanker	5874	11	412-0 x 53-0 x 31-0	2850	3- 5-21
San Ugon	Eagle Oil Transport Co.	Oil Tanker	5874	11	412-0 x 53-0 x 31-0	2850	4-16-21
John Purroy Mitchell	New York fire department	Fire Boat	334	11	132-0 x 27-0 x 14.75	750	7-23-21
STATEN ISLAND SHIPBUILDING CO., STATEN ISLAND, N. Y.							
Franklin	Galena Navigation Co.	Oil Tanker	2841	12	312-0 x 43-0 x 26-0	1931	1- 3-21
Dixiano	American Sugar Transp. Co.	Tanker	4323	10	375-0 x 50-0 x 29-0	2093	5-21-21
Socony 107	Standard Oil Co. of N. Y.	Oil Barge	402	.....	150-0 x 27-0 x 11-5	.....	3-21-21
Socony 108	Standard Oil Co. of N. Y.	Oil Barge	402	.....	150-0 x 27-0 x 11-5	.....	4-12-21
Socony 113	Standard Oil Co. of N. Y.	Oil Barge	1105	.....	258-0 x 40-0 x 13-0	.....	4-14-21
Socony 114	Standard Oil Co. of N. Y.	Oil Barge	1105	.....	258-0 x 40-0 x 13-0	.....	7- 1-21
Socony 115	Standard Oil Co. of N. Y.	Oil Barge	1105	.....	258-0 x 40-0 x 13-0	.....	7-20-21
Wellfleet	Staples Transport'n Co.	Sea Tug	450	11	136.5 x 27-0 x 16.5	800	8- 4-21
President Roosevelt	City of New York	Ferryboat	2481	17	250-0 x 46-0 x 19.5	3500	11- 5-21

1921 Construction Record of U. S. Yards

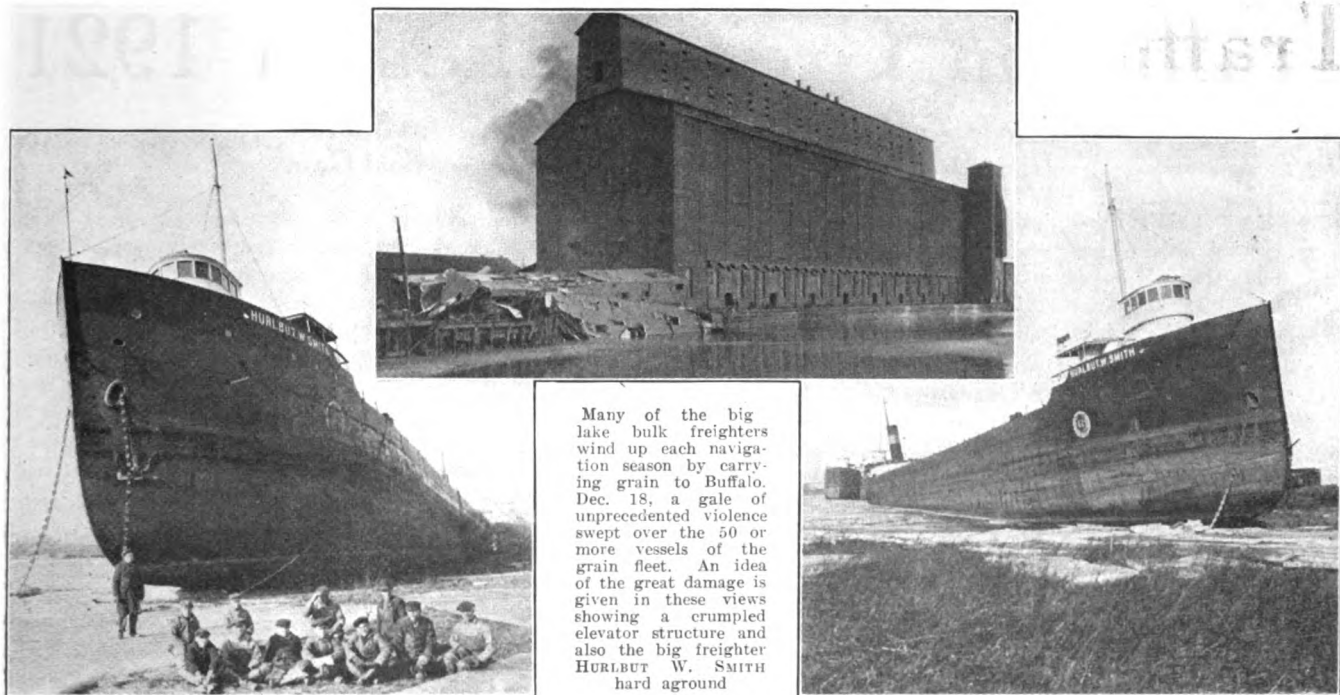
Complete Tabulation Showing Vessels Delivered and Launched

SUN SHIPBUILDING CO., CHESTER, PA.							
Name or Yard No.	Name and Address of Owner	Type of Vessel	Gross Tonnage	Speed Knots	Length, Breadth and Depth, Feet	I. H. P.	Date Launched
Agwiworld	Atlantic, Gulf & West Indies Steamship Lines	Tanker	7078	10½	430-0 x 59-0 x 33-3	2800	12-22-20
Samuel L. Fuller	Sinclair Navigation Co.	Tanker	7052	10½	430-0 x 59-0 x 33-3	2800	12-11-20
Jos. N. Cudahy	Sinclair Navigation Co.	Tanker	7052	10½	430-0 x 59-0 x 33-3	2800	1- 8-21
Cerro Ebano	Pan American Petroleum & Transport Co.	Tanker	8880	12	480-0 x 65-9 x 37-0	4250	2-19-21
Cerro Azul	Pan American Petroleum & Transport Co.	Tanker	8880	12	480-0 x 65-9 x 37-0	4250	2-26-21
J. N. Pew	Sun Co.	Tanker	9074	10½	480-0 x 65-9 x 37-0	3000	4-23-21
Agwihavre	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8862	12	480-0 x 65-9 x 37-0	4250	4- 2-21
Agwimex	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8862	12	480-0 x 65-9 x 37-0	4250	8- 6-21
Foldenford	Norwegian American Line	Tanker	6805	10½	430-0 x 59-0 x 33-3	2800	5-12-21
David McKelvy	Tidewater Oil Co.	Tanker	6820	10½	430-0 x 59-0 x 33-3	2800	6- 4-21
Sunoco	Societe Anonyme et de Commerce	Tanker	6998	10½	430-0 x 59-0 x 33-3	2800	12- 4-20
TANK SHIPBLDG. CORP., NEW YORK							
21	Sunset Fuel Oil Co.	Ocean Barge	.....	.....	.....	.....	1-21
22	Bacon Oil Co.	Oil Barge	.....	.....	.....	.....	3-21
23	Scottish American Oil Co. Ltd.	Tunnel Tug	.....	.....	.....	.....	4-21
TEXAS STEAMSHIP CO., BATH, ME.							
Illinois	The Texas Steamship Co.	Tanker	6702	11½	415-10 x 56-0 x 32-9	3000	6-11-21
New Jersey	The Texas Steamship Co.	Tanker	6702	11½	415-10 x 56-0 x 32-9	3000	11-19-21
Texaco 173	The Texas Steamship Co.	Tanker Barge	658	.....	175-0 x 33-0 x 14-0	.....	1-15-21

1921 Construction Record of U. S. Yards

Complete Tabulation Showing Vessels on the Ways or Under Contract on Jan. 1, 1922

AMERICAN BRIDGE CO., PITTSBURGH									
Name or Yard No.	Name and Address of Owner	Type of Vessel	Gross Tonnage	Speed Knots	Length, Breadth and Depth, Feet	I. H. P.	Probable Launching Date		
15 Barges	U. S. Engineers Corps	Barges	227	....	120-0 x 30-0 x 7-0	....	....
2 Barges	Undisclosed interest	Decked Barge	360	....	150-0 x 32-0 x 7-6	....	....
2 Towboats	Carnegie Steel Co.	Towboats	300	....	150-0 x 33-0 x 6-0	....	Jan. & Feb.		
12 Barges	Undisclosed interest	Barges	315	....	135-0 x 26-0 x 10-0	....	Apr. & May		
AMERICAN CAR & FOUNDRY CO., WILMINGTON, DELA.									
Lot 558	Penn Sand & Gravel Co.	Sand Scow	....	....	75-0 x 26-0 x 7-6	....	....
Lot 559	Penn Sand & Gravel Co.	Sand Scow	....	....	75-0 x 26-0 x 7-6	....	....
Lot 560	Penn Sand & Gravel Co.	Land dredge	....	....	70-0 x 32-0 x 6-6	....	....
J. O. 22945	Govt. Philippine Islands	Harbor tug	....	....	....	....	....
BETHLEHEM SHIPBUILDING CORP., LTD., BETHLEHEM, PA.									
5314	Six Minute Ferry Co.	Ferry	2500	....	225-0 x 42-0 x 20-0	2500	12-30-21		
5315	Six Minute Ferry Co.	Ferry	2500	....	225-0 x 42-0 x 20-0	2500	2- 4-22		
5316	Six Minute Ferry Co.	Ferry	2500	....	225-0 x 42-0 x 20-0	2500	....	
R. D. Leonard	Atlantic Refining Co.	Tanker	1818	9½	266-0 x 39-0 x 20-0	800	12-17-21		
Chilore	Ore Steamship Co.	Ore & Oil	15000	11½	550-0 x 72-0 x 44-0	5000	....	
Lebore	Ore Steamship Co.	Ore & Oil	15000	11½	550-0 x 72-0 x 44-0	5000	....	
Manore	Ore Steamship Co.	Ore & Oil	15000	11½	550-0 x 72-0 x 44-0	5000	3-18-22		
Steelore	Ore Steamship Co.	Ore & Oil	15000	11½	550-0 x 72-0 x 44-0	5000	5-13-22		
125	.....	Tanker	6050	10	354-0 x 49-0 x 29-0	2000	1-15-22		
DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.									
No. 59	John C. Dahmer, Detroit	Ferry Boat	....	10	65-0 x 20-0 x 7-0	75	4- 1-22		
No. 60	H. E. Searfoss, Alexandria, Ind.	Fruit Carrier	....	10	65-0 x 14-0 x 8-0	75	4- 1-22		
DRAVO CONTRACTING CO., PITTSBURGH									
No. 5	.....	Dump Scow	570	....	144-0 x 37-0 x 11-8	....	....
No. 1	.....	Drill Boat	1100	....	157-0 x 52-0 x 12-9	....	....
No. 1	.....	Deck Barge	215	....	120-0 x 32-0 x 7-0	....	....
No. 2	.....	Deck Barge	215	....	120-0 x 32-0 x 7-0	....	....
No. 3	.....	Deck Barge	215	....	120-0 x 32-0 x 7-0	....	....
No. 1	.....	Towboat	150	....	134-6 x 28-0 x 4-6	....	....
No. 1	.....	Derrick Hull	100	....	76-6 x 34-0 x 5-0	....	....
No. 1	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 2	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 3	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 4	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 5	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 6	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 7	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 8	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 9	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
No. 10	.....	Coal Barge	430	....	200-0 x 26-0 x 10-0	....	....
LOS ANGELES SHIPBUILDING & DRY DOCK CO., SAN PEDRO, CAL.									
Hull 36	Los Angeles Shipbuilding & Dry Dock Co.	Barge	484	....	88-0 x 34-0 x 9-0	....	Jan.		
MANITOWOC SHIPBUILDING CORP., MANITOWOC, WIS.									
Hull 205	Milwaukee Tug Boat Line	Tug	150	....	90-0 x 22-0 x 12-6	400	Jan. 1922		
MARIETTA MFG. CO., POINT PLEASANT, W. VA.									
Tom Green	Gordon C. Green	Freight	355	....	200-0 x 38-0 x 6-0	400	....	
NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.									
Constellation	United States Navy	Battle Cruiser	....	....	....	....	....
Ranger	United States Navy	Battle Cruiser	....	....	....	....	....
Iowa	United States Navy	Battleship	....	....	....	....	....
Hull 263	Building for Cox & Stevens, Naval Architects	Yacht	....	....	....	....	....
NEW YORK SHIPBUILDING CORP., CAMDEN, N. J.									
265	Builder's Account	Bulk Oil	6,700	11	419-3 x 56-3 x 33-4	3,000	1922		
Kamoi	Imperial Japanese Navy	Fleet Oilier	10,500	....	....	....	1922		
SUN SHIPBUILDING CO., CHESTER, PA.									
Hull 42	Atlantic, Gulf & West Indies Steamship Lines	Tanker	8880	12	480-0 x 65-9 x 37-0	4250	....	
Hull 43	Atlantic, Gulf & West Indies Steamship Lines	Tanker	9074	10½	480-0 x 65-9 x 37-0	3000	....	
Hull 49	Pennsylvania Railroad	Ferry	764	14	168-0 x 38-0 x 14-8	720	....	
Hull 50	Pennsylvania Railroad	Ferry	764	14	168-0 x 38-0 x 14-8	720	....	
CHARLES WARD ENGINEERING WORKS, CHARLESTON, W. VA.									
Hull 17	War Department	Towboat	....	....	150-0 x 28-0 x 13-0	....	....
Hull 18	War Department	Towboat	....	....	150-0 x 28-0 x 13-0	....	....
Hull 19	Pan American Petroleum & Transport Co.	Towboat	....	....	136-0 x 32-0 x 5-6	....	....



Many of the big lake bulk freighters wind up each navigation season by carrying grain to Buffalo. Dec. 18, a gale of unprecedented violence swept over the 50 or more vessels of the grain fleet. An idea of the great damage is given in these views showing a crumpled elevator structure and also the big freighter HURLBUT W. SMITH hard aground

Lake Fleet Swept by Terrific Gale

LAKE shipping was struck a severe blow on Dec. 18 when in a gale at Buffalo practically the entire grain fleet waiting to be unloaded at the elevators was swept from its moorings and blown high upon the beach or the ships driven into one another with such force that nearly all of the vessels were required to make some repairs either to their hulls or their rigging.

Of the fleet, 29 ships were moored behind the south breakwater and of these only the SIERRA held to her anchorage. The other 28 were scattered along the harbor line, many being driven hundreds of feet, the J. L. REPLOGLE being swept more than 1200 feet from her mooring. Where these vessels were found after the storm, as compared with their positions before it, may be seen in the drawing on page 85, the dotted lines indicating the boats as originally anchored.

The 29 vessels behind the breakwater, besides the SIERRA and the REPLOGLE, were the MERTON E. FARR, HOOVER & MASON, JAMES E. DAVIDSON, CUYLER ADAMS, FRANK W. HART, BALL BROS., FRANK C. BALL, L. M. BOWERS, SONOMA, SINALOA, G. G. BARNUM, LOUIS W. HILL, W. A. AMBERG, LEONARD C. HANNA, CARMY A. THOMPSON, JAMES A. CAMPBELL, J. C. WALLACE, C. H. McCULLOUGH JR., JOSEPH SELLWOOD, C. S. ROBINSON, JOHN SHERWIN, HENRY G. DALTON, EMORY L. FORD, HERBERT K. OAKES, R. L. IRELAND and J. S. ASHLEY.

Practically all of these ships have been compelled to make repairs and before many of them could be moved from their groundings, their cargoes had to be light-

ered. Eight were taken to Lorain for repairs, three to Cleveland, and one to Ashtabula, the others remaining at Buf-

In Buffalo Storm

Name of Steamer	Owner or Operator
MERTON E. FARR.....	G. A. Tomlinson
HOOVER & MASON.....	G. A. Tomlinson
JAMES E. DAVIDSON.....	G. A. Tomlinson
CUYLER ADAMS.....	G. A. Tomlinson
J. DAVIDSON.....	G. A. Tomlinson
FRANK W. HART.....	G. A. Tomlinson
BALL BROS.....	G. A. Tomlinson
FRANK C. BALL.....	G. A. Tomlinson
L. M. BOWERS.....	G. A. Tomlinson
SONOMA.....	G. A. Tomlinson
SINALOA.....	G. A. Tomlinson
SIERRA.....	G. A. Tomlinson
G. G. BARNUM.....	G. A. Tomlinson
J. L. REPLOGLE.....	M. A. Hanna & Co.
LOUIS W. HILL.....	M. A. Hanna & Co.
W. A. AMBERG.....	M. A. Hanna & Co.
LEONARD C. HANNA.....	M. A. Hanna & Co.
CARMY A. THOMPSON.....	M. A. Hanna & Co.
JAMES A. CAMPBELL.....	Interlake SS. Co.
J. C. WALLACE.....	Interlake SS. Co.
C. H. McCULLOUGH JR.....	Interlake SS. Co.
JOSEPH SELLWOOD.....	Interlake SS. Co.
C. S. ROBINSON.....	Interlake SS. Co.
SAMUEL MATHER.....	Interlake SS. Co.
JOHN SHERWIN.....	Interlake SS. Co.
HENRY G. DALTON.....	Interlake SS. Co.
EMORY L. FORD.....	H. K. Oakes
HERBERT K. OAKES.....	H. K. Oakes
R. L. IRELAND.....	Kinney Steamship Co.
J. S. ASHLEY.....	Kinney Steamship Co.
A. T. KINNEY.....	Kinney Steamship Co.
ANDREW S. UPSON.....	Kinney Steamship Co.
AMAZON.....	Hutchinson & Co.
JAMES P. WALSH.....	Hutchinson & Co.
MATTHEW ANDREWS.....	Henry Steinbrenner
HENRY STEINBRENNER.....	Henry Steinbrenner
WILLIAM P. SNYDER.....	Shenango SS. Co.
WILLIAM P. SNYDER JR.....	Shenango Furnace Co.
HURLBUT W. SMITH.....	Great Lakes SS. Co.
CHARLES M. WARNER.....	Great Lakes SS. Co.
CHARLES HUBBARD.....	Great Lakes SS. Co.
WILLIAM LIVINGSTONE.....	John T. Kelly
HOWARD M. HANNA JR.....	John T. Kelly
C. RUSSELL HUBBARD.....	John T. Kelly
W. C. RICHARDSON.....	John T. Kelly
W. H. BECKER.....	Valley Steamship Co.
E. W. OGBAY.....	General Transit Co.
FRANK H. GOODYEAR.....	Ralph D. Mitchell

falo. It was impossible to estimate or determine the damage to many of the boats until they were drydocked, as bottom plates, stems, shoes, etc., were pierced or broken, and several lost their anchors.

HURLBUT W. SMITH was driven as far ashore as any of the fleet and is believed to have suffered considerable damage. Her position after the storm is shown in accompanying illustrations.

Immediately after the storm, representatives of the owners were sent to Buffalo where already other representatives, insurance underwriters, wreckers with lighters, etc., already were at work upon the vessels. R. Parry-Jones, of the American Bureau of Shipping, called a meeting which was attended by Capt. Warren Jones of the Tomlinson fleet, William Schaufele of the Hanna, George Lynn of the Great Lakes Steamship Co., Capt. Walter Stewart and William Fetting of the Interlake, and Ralph Mitchell of the Mitchell line.

Captain Lynn was appointed wreck master and managed the entire clearing, assisted by other representatives of owners. The first vessels pulled off and re-moored were the C. H. McCULLOUGH JR. and the J. C. WALLACE. The HURLBUT W. SMITH was the last of the grounded ships to be floated.

Of the ships early released, it was found that HOOVER & MASON sustained damage to 68 plates, stem and shoe; the LEONARD C. HANNA, 15 top plates; the J. C. WALLACE, 33 plates; the EMORY L. FORD, 29 plates; the ANDREW S. UPSON, loose rivets; the SHENANGO, 28 plates; the C. RUSSELL HUBBARD, 18 plates; and the W. H. BECKER, 4 bottom plates.

Traffic on Great Lakes in 1921

Shipments of Bulk Freight on Inland Seas Drops Sharply —Iron Ore Accounts for Loss as Grain and Coal Gain

GREAT Lakes ships during 1921 carried only 63 per cent of the bulk freight moved in the preceding year. The total for 1921 showed one of the most striking declines during any 12-month period in the history of the lakes. The actual volume, as revealed in the large insert chart, was smaller than in any year since 1911, also falling below the figures for 1910, 1909 and 1907. The aggregate movement of the bulk freight commodities, iron ore, coal, grain, stone, was 60,744,264 gross tons. Of this amount iron ore accounted for 22,300,726 gross tons, grain, including flour, for 11,134,290 gross tons, bituminous coal for 20,011,054 gross tons, anthracite coal for 3,793,000 gross tons, and stone for 3,505,094 gross tons. Iron ore shipments which are the backbone of the Great Lakes bulk freight movement, showed the greatest decline, a result of the stoppage in demand from iron and steel plants for the basic raw materials. In contrast with the 22,300,726 gross

tons moved last year, 1920 shipments of iron ore were 58,527,226 gross tons. In 1919 the ore movement aggregated 47,177,395 gross tons. The greatest ore shipments on record were made in 1916 when the total was 64,734,198 gross tons. Ore shipments fell 62 per

cent. Coal shipments held up in much better shape, the carry-over demand from the preceding year's shortage accounting partially for this increase. In addition, the release of ships from the ore trade brought about a marked improvement in dispatch. For this

trade vessel tonnage was always plentiful, in contrast to conditions in the immediately preceding year. The total movement of 26,660,652 net tons compared with shipments of 24,704,011 net tons in 1920 and 27,461,119 net tons in 1913 with 33,362,379 net tons. The 1917 and 1918 totals were approximately equal to the 1913 record. Of the coal movement, bituminous shipments were 22,412,380 net tons, a gain of 1,281,007 net tons over 1920. Anthracite shipments were 4,248,272 net tons against 3,572,638 net tons in 1920, a gain of 675,634 net tons. Grain shipments showed the only pronounced gain of any branch of lake traffic mounting from 6,059,473 gross tons in 1920 to 11,134,-

Great Lakes Traffic Statistics

COMMERCE THROUGH SOO CANAL

Vessels:	Items	—Total traffic for—		—Increase or decrease—	
		Season 1920	Season 1921	Amount	Per cent Inc. Dec.
Steamers	Number	16,336	10,779	5,557	34
Sailing	Number	1,354	538	816	60
Unregistered	Number	1,157	1,530	373	32
Total	Number	18,847	12,847	6,000	32
Lockages	Number	13,193	9,653	3,540	27
Tonnage:					
Registered	Net	58,194,083	32,184,240	26,009,843	45
Freight	Net tons	79,282,496	48,259,254	31,023,242	39
Passengers	Number	68,451	66,621	1,830	3
Lumber	M. ft. B. M.	192,854	206,306	13,452	7
Flour	Barrels	7,477,533	10,217,305	2,739,772	37
Wheat	Bushels	143,456,487	197,715,010	54,258,523	38
Grain	Bushels	51,630,135	95,694,264	44,064,129	85
Copper	Net tons	51,545	31,533	20,012	39
Iron ore	Net tons	56,780,498	22,595,323	34,185,175	60
Mfd. & pig iron	Net tons	76,194	39,035	37,159	49
Coal, soft	Net tons	12,096,993	12,507,027	410,034	3
Coal, hard	Net tons	2,059,266	2,256,128	196,862	10
Salt	Net tons	99,208	62,313	36,895	37
Oil	Net tons	353,489	301,633	51,856	15
Stone	Net tons	563,271	493,447	69,824	12
General Mdse.	Net tons	556,110	600,163	44,053	8

The United States canal was opened April 7 and closed Dec. 24, 1921; season, 262 days.
The Canadian canal was opened April 9 and closed Dec. 16, 1921; season, 252 days.

AVERAGE ORE CARGO

Year	Gross tons	Year	Gross tons
1921	9398	1910	5593
1920	8485	1909	7777
1919	8543	1908	8325
1918	9371	1907	7516
1917	8231	1906	6973
1916	7080	1905	6101
1915	6841	1904	5272
1914	6523	1903	5668
1913	6411	1902	4899
1912	6244	1901	4459
1911	5716	1900	3783

*D. M. & N. docks only up to 1910.
All docks 1910-1921.

BUFFALO GRAIN RECEIPTS

	1921	1920
Flour, bbls.	6,613,369	4,510,408
Wheat, bu.	134,610,352	74,395,512
Corn	40,050,375	3,826,776
Oats	23,478,121	5,151,499
Barley	7,660,229	4,468,705
Rye	8,254,556	16,676,107
Total, bu.	214,052,623	104,518,599
Flour to wheat, bu.	33,067,855	22,552,040
Flaxseed, bu.	6,301,283	1,626,889

Grand total, bu. 253,421,761 128,697,528

SIZE OF GREAT LAKES BULK FREIGHTER FLEET

Year	No. of vessels Jan. 1	Launchings number	Subtractions number	Carrying capacity of new vessels gross tons	Carrying capacity subtracted gross tons	Total carrying capacity one trip gross tons
1921	539	..	..	..	..	3,219,125
1920	538	4	3	50,000	4,212	3,173,337
1919	540	..	2	..	13,684	3,187,021
1918	548	..	8	..	38,742	3,225,763
1917	540	11	3	126,000	9,822	3,109,585
1916	546	7	13	82,000	45,734	3,073,319
1915	546	1	1	10,000	3,104	3,066,423
1914	548	7	9	61,000	26,166	3,031,589
1913	572	4	28	28,000	120,919	3,124,508
1912	589	5	22	49,500	60,945	3,135,953
1911	592	5	8	55,000	29,477	3,108,330
1910	589	20	17	194,500	60,617	2,973,447
1909	587	17	5	157,300	37,197	2,853,344
1908	567	24	4	101,400	14,837	2,766,781
1907	542	40	16	368,000	46,973	2,442,754
1906	514	40	18	381,000	40,987	2,065,111
1905	518	29	33	260,200	114,374	1,919,285

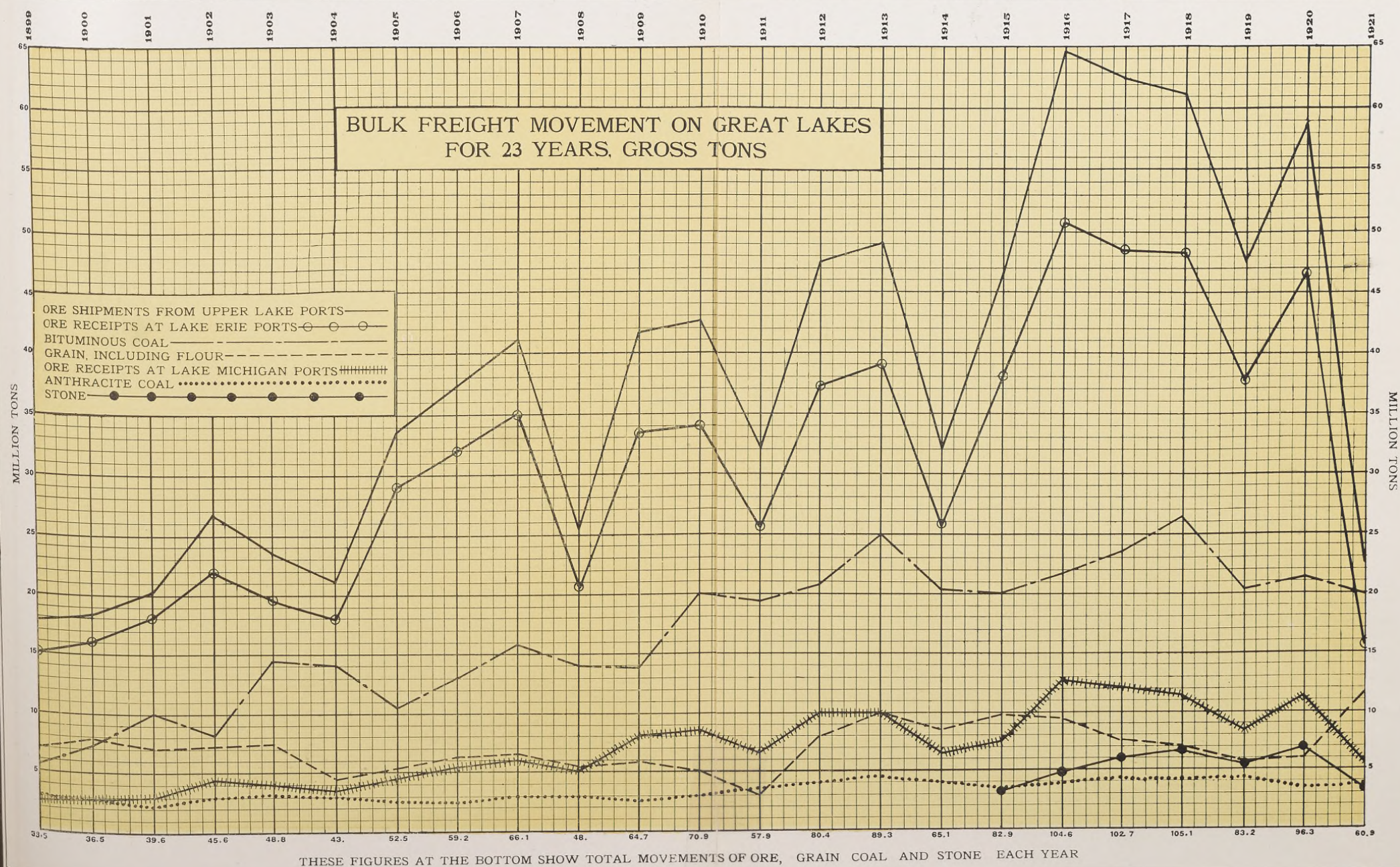
CONTRACT FREIGHT RATES ON IRON AND COAL

	Cents, 1921	Cents, 1920	Cents, 1919	Cents, 1918	Cents, 1917	Cents, 1916	Cents, 1915	Cents, 1914	Cents, 1913	Cents, 1912
Iron ore, head of Lake Superior to Ohio ports, gross ton	80	110	80	100	100	50	40	50	55	50
Iron ore, Marquette to Ohio ports, gross ton	72	100	72	90	90	45	35	45	50	45
Iron ore, Escanaba to Ohio ports, gross ton	65	83	60	75	75	35	25	35	40	35
Coal, Ohio ports to Lake Michigan ports, net ton	60	60	42.5	55	50	30	30	30	30	30
Coal, Ohio ports to Duluth, net ton	50	50	42.5	48	42.5	30	30	30	30	30

AVERAGE DAILY FREIGHT RATES ON GRAIN AND LUMBER

	2.75	5.50	3.63	4.67	5.13	4.18	2.25	1.14	2.01	2.02
Wheat, Duluth to Buffalo, bushel	2.75	5.50	3.63	4.67	5.13	4.18	2.25	1.14	2.01	2.02
Wheat, Chicago to Buffalo, bushel	2.50	5.00	3.00	3.82	2.50	3.08	1.20	1.13	1.43	1.39
Lumber, head of lakes to Lake Erie ports	500	500	498	491	450	364	261	225	256	276

Marine Review



Supplement to the issue of February, 1922. MARINE REVIEW

290 gross tons last year. Shipments of stone, a comparative newcomer as an important bulk freight commodity, dropped from 6,983,911 gross tons in 1920 to 3,505,094 gross tons last year. The loss in iron ore

Furnace Shipments ORE FORWARDED TO FURNACES FROM LAKE ERIE DOCKS MAY 1-DEC. 1

Year	Gross tons	Year	Gross tons
1921.....	14,822,764	1918.....	43,349,912
1920.....	40,931,241	1917.....	43,258,742
1919.....	32,648,356	1916.....	44,982,917

shipments approximated 62 per cent and in stone shipments 50 per cent, while the grain movement gained 83 per cent and the coal movement 8 per cent.

Restricted demand for ore resulted in many boats remaining out of commission all during the season. With only the larger and more economical units in service, the average ore cargo reached the highest figure on record. Comparison of the record of all the shipping docks showed an average of 9398 gross tons of iron ore carried on each vessel leaving these docks. In 1918 the average was 9371 tons, these being the only years when the record has exceeded the 9000-ton mark.

Construction of new lake bulk freighters has been practically at a standstill for four years with the exception of four large steamers completed

Iron Ore Traffic on the Great Lakes in 1921

IRON ORE ON LAKE ERIE DOCKS DEC. 1, GROSS TONS						
	1921	1920	1919	1918	1917	1916
Toledo	347,905	336,609	332,051	399,839	399,479	394,869
Huron	699,850	733,297	698,927	607,233	556,765	590,743
Lorain	769,840	1,143,515	777,803	828,384	978,108	1,076,105
Cleveland	1,367,589	1,791,921	2,078,201	2,117,176	1,914,071	1,936,906
Fairport	340,927	498,704	528,360	510,855	536,580	474,930
Ashtabula	2,742,617	3,552,503	3,429,258	3,292,738	3,435,624	3,266,752
Conneaut	1,914,045	2,059,193	1,850,739	1,703,701	1,544,706	1,363,550
Erie	601,661	374,363	405,761	439,094	519,698	625,193
Buffalo	312,475	440,749	355,194	525,947	441,318	438,712
Total	9,096,909	10,930,854	10,456,314	10,424,967	10,326,349	10,167,760

IRON ORE RECEIPTS AT LAKE ERIE PORTS, GROSS TONS						
	1921	1920	1919	1918	1917	1916
Detroit	269,488	813,381	549,096	444,936	418,151	425,579
Toledo	411,147	2,654,957	1,536,437	2,608,497	2,445,602	2,035,160
Huron	553,807	1,421,509	1,134,104	1,620,712	1,631,395	1,324,112
Lorain	1,788,175	4,045,286	3,379,421	3,494,370	3,831,244	4,613,929
Cleveland	2,565,902	7,865,757	7,466,921	9,681,882	9,077,161	10,669,745
Fairport	1,340,017	1,247,964	1,952,635	1,853,465	2,311,179	2,580,647
Ashtabula	2,001,806	11,028,518	8,377,277	11,001,574	10,251,304	11,474,268
Conneaut	5,329,396	5,989,763	7,056,882	6,650,898	8,729,754	9,588,341
Erie	386,836	2,218,706	1,102,478	1,809,619	2,079,227	1,525,031
Buffalo	1,160,639	8,196,981	4,649,008	8,845,775	7,843,215	7,432,220
Port Colborne.....	23,244	187,172	219,326	171,287	194,627	138,240
Total	15,830,457	45,669,994	37,423,585	48,183,015	48,812,859	51,807,272

IRON ORE SHIPMENTS FROM UPPER LAKE PORTS, GROSS TONS						
	1921	1920	1919	1918	1917	1916
Escanaba	1,806,656	7,361,070	4,963,358	6,774,969	7,156,854	7,457,444
Marquette	786,946	3,415,108	2,132,935	3,457,054	3,207,145	3,858,092
Ashland	2,264,705	8,180,852	5,915,383	7,565,008	7,597,841	8,057,814
Superior	4,991,278	14,812,398	10,919,968	14,068,341	13,978,341	12,787,046
Duluth	9,164,803	15,479,334	16,821,209	20,567,288	20,567,419	21,837,949
Two Harbors.....	3,286,338	9,278,464	6,424,545	8,723,472	9,990,901	10,735,853
Total	22,300,726	58,527,226	47,177,395	61,156,732	62,498,901	64,734,198

IRON ORE RECEIPTS AT LAKE MICHIGAN PORTS, GROSS TONS						
	1921	1920	1919	1918	1917	1916
South Chicago.....	2,665,318	6,280,521	4,670,054	6,113,492	7,030,174	7,740,877
East Jordan, Mich.	10,892	14,452	32,706	33,940	35,792	38,573
Boyer City, Mich.	30,053	30,053	47,061	34,137	44,437	43,788
Milwaukee	20,654	129,039	133,220	166,626	224,570	239,219
Ind. Harbor, Ind.	779,478	1,264,114	1,150,683	1,413,392	900,692	793,215
Gary, Ind.	2,362,336	3,675,005	2,509,338	3,848,295	3,883,082	2,718,185
Total	5,838,678	11,393,184	8,543,062	11,609,882	12,118,747	11,573,857

in 1920. The past season with its revelation of an oversupply of tonnage in many branches of ocean traffic,

resulted in a number of small ships returning to the lakes. These vessels had been taken to salt water during the crest of the war demand for shipping and the majority of them are expected to find their way back to fresh water. These vessels figured prominently in the late movement of grain.

Record of Traffic Through Panama Canal

		Atlantic to Pacific traffic —Panama Canal—			Pacific to Atlantic traffic —Panama Canal—			Total traffic through canal —Panama Canal—		
		No. of ships	net tonnage	Tons of cargo	No. of ships	net tonnage	Tons of cargo	No. of ships	net tonnage	Tons of cargo
1921	American	48	227,644	173,027	36	160,457	182,992	84	388,101	356,019
	Foreign	75	311,373	213,654	63	242,937	285,767	138	554,310	499,421
	Total	123	539,017	386,681	99	403,394	468,759	222	942,411	855,440
October	American	43	201,893	165,942	46	195,968	217,141	89	397,861	383,083
	Foreign	88	369,282	208,495	78	302,411	394,197	166	671,693	602,692
	Total	131	571,175	374,437	124	498,379	611,338	255	1,069,554	985,775
September	American	46	210,031	161,875	41	200,375	222,226	87	410,406	384,101
	Foreign	82	320,603	138,845	52	194,128	231,948	134	514,731	370,793
	Total	128	530,634	300,720	93	394,503	454,174	221	925,137	754,894
August	American	43	148,188	146,159	51	180,346	234,208	94	328,534	380,367
	Foreign	77	339,031	171,811	65	297,711	287,095	142	636,742	458,906
	Total	120	487,219	317,970	116	478,057	521,303	236	965,276	839,273
July	American	36	151,595	103,698	37	169,842	212,523	73	321,437	316,221
	Foreign	69	251,456	154,742	64	237,720	238,019	133	489,176	392,761
	Total	105	403,051	258,440	101	407,562	450,542	206	810,613	708,982
June	American	47	214,919	199,183	34	126,642	142,052	81	341,561	341,235
	Foreign	56	200,383	160,401	55	219,533	193,084	111	419,916	353,485
	Total	103	415,302	359,584	89	346,175	335,175	192	761,477	694,720
May	American	38	156,454	198,197	52	213,749	217,597	90	370,203	415,794
	Foreign	62	257,975	193,126	58	236,439	193,815	120	494,414	376,941
	Total	100	414,429	391,323	110	450,188	411,412	210	864,617	792,735
April	American	46	200,290	223,033	45	194,368	146,660	91	394,658	369,693
	Foreign	72	292,216	277,768	64	268,629	260,152	136	560,845	537,926
	Total	119	492,506	500,801	109	462,997	406,812	227	955,503	907,613
March	American	54	230,125	261,033	46	205,864	120,223	100	435,989	381,256
	Foreign	86	383,466	375,546	69	293,363	327,761	155	676,829	703,307
	Total	140	613,591	636,579	115	499,227	447,984	255	1,112,818	1,084,563
February	American	42	191,402	219,545	58	238,697	215,479	100	430,099	435,024
	Foreign	72	243,831	255,327	69	242,908	262,553	141	486,739	517,880
	Total	114	435,233	474,872	127	481,605	478,032	241	916,838	952,904
January	American	45	197,955	222,414	58	222,147	234,016	103	420,102	456,430
	Foreign	89	319,764	334,744	87	354,457	385,879	176	674,221	720,623
	Total	134	517,719	557,158	145	576,604	619,895	279	1,094,323	1,177,053

Soo Canal Report

Detailed analysis of the commerce through the Soo canal in 1921 compared with 1920 follows:

EASTBOUND

	To Jan. 1, 1922	To Jan. 1, 1921
Lumber, M. feet B. M.	206,306	192,854
Flour, barrels	10,217,305	7,477,533
Wheat, bushels	197,715,010	143,456,487
Grain, bushels	95,694,264	51,630,135
Copper, net tons.....	31,533	51,545
Iron ore, net tons.....	22,585,503	56,642,679
Pig iron, net tons	526	557
Stone, net tons	24,910	66,944
General merch., net tons	98,124	56,356
Passengers, number ...	33,015	34,013

WESTBOUND

	To Jan. 1, 1922	To Jan. 1, 1921
Coal, soft, net tons...	12,507,027	12,096,993
Coal, hard, net tons...	2,256,128	2,059,266
Iron ore, net tons.....	9,820	137,819
Mfd. iron and steel, net tons	38,509	75,367
Salt, net tons.....	62,313	99,208
Oil, net tons.....	301,633	353,489
Stone, net tons.....	468,537	496,327
General merch., net tons	502,039	499,754
Passengers, number ...	33,606	34,438

SUMMARY

	To Jan. 1, 1922	To Jan. 1, 1921
Vessel passages, number	12,847	18,847
Registered tonnage, net	32,184,240	58,194,083
Freight—		
Eastbound, net tons...	32,113,248	63,464,003
Westbound, net tons...	16,146,006	15,818,493
Total freight, net tons.	48,259,254	79,282,496

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Amy B. Silver	Dec. 1	Disabled	At sea	Abandoned	Grecian	Dec. 9	Disabled	Boston	Prop. dam- aged
Acidus	Dec. 7	Disabled	Gravesend Bay	Eng. trouble	Gilda	Dec. 12	Disabled	At sea	Gear broke
A. H. Hardy	Dec. 6	Hurricane	At sea	Lost	Graham	Dec. 15	Collision	E. of Sea Girt, N.J.	Slight
Agnes Downs	Dec. 6	Hurricane	At sea	Lost	G. J. Cherry	Dec. 26	Gale	Cape Hatteras	To rigging & water tank
Arsa	Dec. 18	Disabled	Bermuda	Prop. blades broken	G. J. Cherry	Dec. 29	Gale	Florida coast	To rigging
Alleghany	Dec. 21	Grounded	Off Sandy Hook	Not stated	Gold West	Dec. 28	Disabled	At sea	Not stated
Albert E. Watts	Dec. 6	Collision	Near Port Arthur	To deck	Greensboro	Dec. 25	Fire	Norfolk harbor	Heavy
Astral	Dec. 15	Fire	East Boston	Heavy	Harmony	Dec. 5	Gale	Off Harvey	To deck & bridge
Adour	Dec. 15	Heavy weather	Greenock	Slight	Hugh McKenna	Dec. 14	Ashore	Near Ellis Island	Not stated
Alice Cooke	Dec. 15	Disabled	Honolulu	Not stated	Harvard	Dec. 13	Wrecked	Honolulu	Total loss
Amelia	Dec. 23	Collision	New York	Not stated	Howard Russell	Dec. 16	Ashore	Penobscot Bay	Total loss
Anna Camp	Dec. 24	Ashore	Chesapeake Bay	Not stated	H. C. Folger	Jan. 2	Stranded	Hillsboro	Undamaged
Aida	Dec. 24	Running ice	At sea	May be total wreck	Herbert May	Dec. 23	Disabled	At sea	Not stated
Arizonan	Dec. 22	Disabled	SE of Highlands	Eng. dis- abled	Henry R. Mallory	Dec. 23	Collision	Off Liberty	Slightly, to stern
Arno Mendi	Dec. 22	Ashore	Vegesack, Germany	Not stated	Hydrus	Dec. 2	Ashore	Whisky Island	Slight
Allaguash	Dec. 22	Heavy weather	Ponta Delgada, Azores	Slight	Hoover and Mason	Dec. 18	Gale, ashore	Buffalo	Stern badly crushed
Abie Keast	Dec. 31	Collision	Parrsboro	Slight	Jean & Mary	Dec. 7	Not stated	Penguin Islands	Total loss
A. T. Kinney	Dec. 18	Gale, collision	Buffalo	Leaking	Jessy & Alice	Dec. 8	Bad weather	At sea	To deck
Amazon	Dec. 18	Collision	Buffalo	Plates dam- aged	John Westerly	Dec. 7	Ashore	Off Cape Hatteras	Not stated
Brant County	Dec. 5	Disabled	Quebec	Tanks dam- aged	J. D. Archbold	Dec. 9	Disabled	Newport News	Machy, dis- abled
Bethlehem	Dec. 6	Disabled	Off Shippegan, NB	Lost rudder	Jessie Lee	Dec. 20	Gale, leaking	Near Southport	Beached
Bolton Castle	Dec. 7	Disabled	Highlands, NJ	Not stated	Jethou	Dec. 27	Ashore	Martin Garcia	Not stated
Badger	Dec. 14	Disabled	Galveston Channel	Bottom up	Johan Paulsen	Dec. 27	Floating ice	Astoria	Jettis, cargo
Blossom Heath	Dec. 19	Collision	Red Hook Flats	Not stated	Jean Smith	Dec. 15	Rough weather	Near Lunenburg	Sails torn
Blue Peter	Dec. 12	Fire	Off Uruguayan coast	Abandoned	J. L. Replogle	Dec. 18	Ashore, fire	Buffalo	Slight
Burkeland	Dec. 18	Disabled	Bermuda	Leak, sails lost	J. A. Campbell	Dec. 18	Gale	Buffalo	Ashore
Bayway	Dec. 22	Collision	Dustendije	Rudder post damaged	J. C. Wallace	Dec. 18	Gale	Buffalo	Ashore
Brewster	Jan. 7	Grounded	Jacksonville	Undamaged	Joseph Sellwood	Dec. 18	Gale, ashore	Buffalo	Jettis, cargo
Ball Brothers	Dec. 18	Gale	Buffalo	Not stated	J. S. Ashley	Dec. 18	Gale, stranded	Buffalo	Jettis, cargo
Caddo	Dec. 2	Grounded	Off Barnegat	Slight	J. J. Turner	Dec. 18	Gale, collision	Buffalo	Slight
Cactus	Dec. 7	Not stated	Trinity Bay	Total loss	Karachi Maru	Dec. 7	Disabled	W of Cape Flattery	Not stated
Captaine Damaine	Dec. 12	Collision	Port Arthur	Badly dam- aged	Kinsman	Dec. 5	Sinking	At sea	Abandoned
Comet	Dec. 10	Explosion & fire	Vanity Fair	Not stated	Katuna	Dec. 11	Collision	Keelung harbor	Slight
Cabo Espartel	Dec. 17	Grounded	Schuykill River	Not stated	Korea Maru	Dec. 11	Collision	Keelung harbor	Undamaged
Chiswick	Dec. 13	Disabled	Bermuda	Machy, dis- abled	King City	Jan. 4	Struck dock	Havre	To stem, leak
Chemung	Dec. 2	Unknown	Near Fort Adams	Sank	K. R. Kingsbury	Dec. 21	Disabled	Panama	Prop. blades lost
Cambridge	Dec. 21	Hurricane	Near Claiborne, Md.	Grounded	Karma	Dec. 21	Grounded	St. Johns, NF	Bottom damaged
Canadian Pacific	Dec. 19	Ashore	Portier Pass	Heavy	Keybell	Dec. 18	Storm	Kingston	Bottom damaged
Collingsworth	Dec. 5	Grounded	Galveston	Slight	Lila Boutillier	Dec. 3	Fire	At sea	Abandoned
Cowrie	Dec. 6	Collision	Near Port Arthur	Slight	Little Princess	Dec. 5	Gale, dragged anchor	Off Harvey	Slight
Conios	Dec. 11	Struck pier	Claymont, Del.	Undamaged	La Bette	Dec. 20	Grounded	Ship Island Bar	Undamaged
Carlos	Nov. 30	Storm	At sea	Lost main rigging	Lake Farley	Dec. 15	Disabled	At sea	Eng. trouble
Consort	Dec. 16	Collision	New York	Not stated	Lone Star State	Dec. 22	Grounded	Chester, Pa.	Not stated
Canadian Voyageur	Dec. 30	Broke anchor	Halifax	Ashore	Lake Elmont	Jan. 1	Grounded	Cartagena lighthouse	Tanks leak
Cornish Point	Jan. 5	Disabled	Off Cape Sable	Eng. trouble	L. W. Hill	Dec. 18	Gale	Buffalo	Ashore
C. H. McCullough	Dec. 18	Gale	Buffalo	Ashore	Manchuria	Dec. 6	Collision	Hamburg	Rudder damaged
C. S. Robinson	Dec. 18	Gale, ashore	Buffalo	Jettis, cargo	Medrie	Nov. 29	Gale	Off Nova Scotia	Leaking
Carmi Thompson	Dec. 18	Gale	Buffalo	Ashore	Medina	Dec. 6	In ballast	Off Merasheen, NF	Abandoned
Cuyler Adams	Dec. 18	Gale	Buffalo	Not stated	Marie Hooper	Dec. 18	Grounded	Off West Bank	Not stated
Drummers' Tax	Dec. 7	Ashore	Bonavista	Not stated	Mambi	Dec. 21	Disabled	Cove Point	Steerer dis.
Daigen Maru	Dec. 8	Heavy gale	At sea	Not stated	Mary C. Hughes	Dec. 14	Foundered	Off Thatchers Island	Not stated
Dianthus	Dec. 6	Hurricane	At sea	Lost	Multonah	Dec. 11	Disabled	San Francisco	Broken steam pipe
Dorothy Cook	Dec. 18	Fire	At sea	Abandoned	Manatee	Jan. 2	Gale	Georges Harbor	Ashore
De la Salle	Jan. 4	Fire	Bremen	To cargo	Mapledawn	Jan. 1	Gale	St. John, NB	Damaged
Defender	Dec. 29	Ashore	Petries Ledges	Total loss	Marion	Jan. 2	Disabled	Rio Janiero	Leak; rudder stock broke
Dunmore	Dec. 21	Not stated	Minots Light	Sank	Mount Evans	Dec. 29	Disabled	E of Fire Island	Not stated
Donna Lane	Dec. 22	Disabled	Honolulu	Not stated	Monte Grappa	Dec. 22	Grounded	Marcus Hook bar	Not stated
Doris	Jan. 5	Grounded	Nantucket	Heavy	Matthew Andrews	Dec. 18	Gale, collision	Buffalo	Not stated
Eastern Leader	Dec. 9	Disabled	At sea	Prop. blades lost	M. E. Farr	Dec. 18	Gale, ashore	Buffalo	Heavy
Exeter City	Jan. 2	Collision	Barry Island	Heavy	Nobles	Dec. 6	Stranded	Pelican Shoals	Not stated
Elie Maud	Jan. 4	Gale	Off St. Martins	Total loss	Natoma	Dec. 6	Hurricane	At sea	Lost
E. L. Ford	Dec. 18	Gale, collision	Buffalo	Heavy	Novelty	Dec. 5	Gale, dragged anchor	Off Harvey	Minor dam- ages
Francis	Dec. 7	Disabled	Off Florida coast	Bottom up	North Dakota	Jan. 4	Collision	Cape Cod	Not stated
Fotis	Dec. 17	Ashore	Near Limerick	Leaking	Nat. L. Gordon	Jan. 2	Disabled	Guantanamo	Leaking
Florence Harvey	Dec. 26	Dragged anchor, ashore	Fort Morgan	Sank, total loss	Nipsic	Dec. 31	Struck rock	Sakito Harbor	Rudder damaged
Frogner	Jan. 6	Disabled	Newport News	Hull dam- aged	Norfolk	Dec. 26	Disabled	New York	Steam pipe broke
Flora M.	Dec. 31	Collision	Parrsboro	Slight	New England	Dec. 21	Disabled	NE of Chebucto Head	Not stated
Frederick H.	Jan. 7	Ashore	Negrotown Point	Unknown	No. 228	Jan. 5	Adrift	Off Cape Charles	Not stated
F. W. Hart	Dec. 18	Gale	Buffalo	Ashore	Nellie Eaton	Dec. 31	Collision ashore	Near Parrsboro	Full of water
Frank C. Ball	Dec. 18	Gale	Buffalo	Plates dam- aged					
Glengarock	Dec. 5	Dragged anchor, struck rock	St. Johns harbor	To windlass					
George B. Mackenzie	Dec. 6	Heavy seas	E of Watch Hill	Boiler tubes dis.					
Gordon	Dec. 6	Hurricane	At sea	Lost					
Glencely	Dec. 9	Disabled	St. Johns, NF	Minor					

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME OF VESSEL	DATE	NATURE	PLACE	DAMAGE RESULTING
Olympic	Dec. 7	Grounded	Newcastle, Del.	Not stated	Steel Worker	Dec. 26	Disabled	Seattle	Hull dam-
Olive Evans	Dec. 6	Hurricane	At sea	Lost	Sonoma	Dec. 30	Disabled	Sydney, NSW	Prop. shaft
Oiwen	Dec. 4	Leaking & abandoned	At sea	Set on fire	Sanford	Dec. 23	Collision	Off Liberty	Upper works
Occidental	Dec. 12	Collision	Port Arthur	To stem	Samuel Mather	Dec. 18	Gale	Buffalo	badly damaged
O. T. Waring	Jan. 5	Ashore	Shell Bank	Undamaged	Shenango	Dec. 18	Collision	Buffalo	Leaking
Paipoonge	Dec. 1	Disabled	Halifax	Eng. trouble	Theresa Stone	Dec. 6	Hurricane	At sea	Lost
Passport	Dec. 6	Hurricane	Bay Verde	Sank	Tonesit	Dec. 8	Disabled	At sea	Gear broke
Prospector	Dec. 6	Hurricane	At sea	Lost	Texas Maru	Dec. 19	Disabled	At sea	Leaking
Pansy	Dec. 6	Hurricane	At sea	Lost	Transvaal	Dec. 10	Collision	Panuco River	badly damaged
Politician	Dec. 13	Disabled	Queenstown	Machy. dis.	T. K. Bentley	Jan. 4	Collision	Cape Cod	Lost head-
Percy R. Pyne II	Dec. 14	Disabled	Jacksonville	Sails damaged	Telumah	Jan. 5	Disabled	Butlers Flat Light	Leaking
Panama	Dec. 15	Collision	E of Sea Girt, N. J.	Slight	Thomas Barlum	Dec. 18	Gale, collision	Buffalo	Slight
Pioneer	Dec. 16	Gale, on rocks	Near Prince Rupert	Slight	Viccola	Dec. 17	Wrecked	S of Cape Race	Total loss
Port Reath	Jan. 3	Disabled	Barbados	Eng. trouble	Valerie	Dec. 8	Disabled	St. Johns	To bulwarks
Percy R. Pine II	Dec. 29	Fire	Jacksonville	Considerable	Virginia	Dec. 28	Not stated	Tacoma, Wash.	and sails
Panola	Dec. 24	Disabled	Needles, I W	Engines dis.	William Donovan	Dec. 6	Leaking	Columbia River	Not stated
Paul E. Simone	Dec. 29	Ashore	Dog Island	Not stated	W. S. Monroe	Dec. 6	Hurricane	At sea	Lost
Portreath	Jan. 3	Disabled	Barbados	Eng. trouble	William Martin	Dec. 6	Hurricane	At sea	Lost
Philip Minch	Nov. 30	Ashore	E of Detour	Leaking	W. O. Galatea	Dec. 6	Hurricane	At sea	Lost
Ruby	Dec. 7	Wrecked	E of New York	Set on fire	William J. Winant	Dec. 17	Fire	Brooklyn	Not stated
Robert P. Murphy	Dec. 19	Collision	Red Hook Flats	Headgear carried away	West Kasson	Dec. 18	Disabled	Bermuda	Prop. loose
Rose Castle	Dec. 10	Disabled	St. Johns, NF	Slight shaft. trouble	William Bisbee	Dec. 20	Disabled	Nassau	Lost fore-
Reine-des-Mers	Dec. 28	Dis. by storm	At sea	Abandoned	Western Ocean	Jan. 1	Disabled	New York	mast, leak
Ruby L. Pentz	Jan. 4	Abandoned	At sea	Set on fire	Willpolo	Dec. 24	Fire	W of San Pedro	Feed pump
R. L. Ireland	Dec. 18	Gale, stranded	Buffalo	Jettis. cargo	Westward Ho	Jan. 2	Struck rock	Hell Gate	dis.
Sunset Glow	Dec. 1	Disabled	Trepassey	Rudder damaged	West Norranus	Dec. 22	Ashore	Vege sack, Germany	Not stated
Senator	Nov. 28	Disabled	At sea	Broke piston rod	W. J. Connors	Dec. 5	Disabled	Soo	Slight
Sagua	Dec. 6	Ashore	Passes	Not stated	W. P. Snyder	Dec. 18	Gale, collision	Buffalo	Not stated
Storm King	Dec. 17	Disabled	At sea	Broken tail shaft	W. A. Amberg	Dec. 18	Gale	Buffalo	Not stated
Sixaola	Dec. 13	Disabled	New York	Eng. trouble	Yoko Maru	Dec. 19	Tanks leaking	Port Townsend	Listed
Shickshinny	Dec. 20	Turbine trouble	At sea	Slight					
Sao Vicente	Dec. 10	Fire	New Bedford	Not stated					
Schodack	Dec. 15	Ashore	Stonehorse Shoal	Not stated					
Sommelsdyk	Jan. 4	Fire	At sea	Not stated					
S-48	Dec. 8	Rammed	Bridgeport, Ct.	Sank					

Record of Traffic at American Ports

New York (Exclusive of Domestic)					Norfolk and Newport News (Exclusive of Domestic)					Baltimore (Exclusive of Domestic)				
Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage	Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage	Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage
December, 1921	398	1,372,663	436	1,604,960	December, 1921	24	83,609	64	184,012	December, 1921	95	281,373	102	312,528
November	423	1,543,430	415	1,506,071	November	27	84,214	60	171,235	November	78	243,934	80	253,943
October	413	1,662,564	428	1,644,729	October	23	68,037	59	151,849	October	73	249,481	78	252,098
September	385	1,304,544	417	1,556,645	September	25	75,836	51	148,987	September	85	259,788	81	260,789
August	478	1,583,991	390	1,300,897	August	44	134,193	63	173,111	August	90	251,499	87	239,482
July	394	1,456,304	403	1,423,109	July	95	267,846	173	491,104	July	116	349,379	123	365,666
June	408	1,368,334	419	1,425,649	June	140	410,926	238	728,458	June	118	359,201	133	413,410
May	425	1,454,033	366	1,328,643	May	129	398,042	201	601,675	May	109	341,731	112	341,381
April	410	1,453,056	438	1,509,353	April	57	179,852	125	375,044	April	114	320,195	119	351,950
March	435	1,574,526	448	1,539,885	March	47	143,487	88	260,053	March	111	320,238	107	316,536
February	424	1,407,133	374	1,315,556	February	55	160,494	108	327,241	February	112	380,602	93	292,881
January	455	1,437,725	414	1,433,564	January	84	251,499	163	442,657	January	131	401,511	112	344,480
December, 1920	516	1,732,485	518	1,802,929	December, 1920	151	367,936	202	505,690	December, 1920	92	264,142	113	329,320

Philadelphia (Including Chester, Wilmington and the whole Philadelphia port district) (Exclusive of Domestic)					San Francisco (Inclusive of Domestic)					Seattle Deep sea arrivals Deep sea departures				
Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage	Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage	Month	Entrances— No. ships	Net tonnage	Clearances— No. ships	Net tonnage
December, 1921	89	256,660	90	285,894	December, 1921	439	845,793	461	854,595	November, 1921	177	489,119	166	454,118
November	89	249,873	87	252,606	November	432	791,219	445	869,988	October	163	431,637	157	443,447
October	86	239,103	67	204,652	October	445	780,840	454	787,144	September	168	434,912	150	387,151
September	60	143,434	66	195,558	September	459	807,276	440	749,911	August	202	519,467	192	517,253
August	84	208,961	61	144,029	August	464	770,980	457	788,238	July	158	450,050	159	436,884
July	75	178,925	61	148,674	July	275	699,092	335	676,340	June	100	331,505	110	341,278
June	71	176,968	74	214,524	June	194	474,948	211	543,629	May	106	299,777	99	282,583
May	110	295,617	70	178,464	May	271	594,409	164	426,255	April	143	339,192	163	370,070
April	105	255,249	79	209,854	April	377	607,559	452	703,717	March	149	372,824	144	369,568
March	102	306,512	87	242,606	March	335	645,435	341	611,575	February	103	295,144	101	272,136
February	104	285,369	75	221,402	February	305	594,636	297	548,103	January	131	312,072	134	344,877
January	84	250,233	68	217,281	January	356	585,689	330	566,201	December, 1920	205	323,744	186	302,051
December, 1920	116	340,133	112	235,821	December, 1920	388	606,666	359	561,188	November	256	348,452	228	337,890

Marine Business Statistics Condensed

Record of Traffic at Principal American Ports for Past Year

New Orleans

Month	(Exclusive of domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921...	208	576,354	271	788,172
November ...	209	533,483	219	600,086
October ...	177	431,976	176	425,186
September ...	191	510,646	226	628,057
August ...	210	478,941	194	462,451
July ...	157	371,379	176	410,749
June ...	172	440,527	195	479,495
May ...	166	410,047	145	354,539
April ...	205	515,287	210	530,283
March ...	201	458,079	202	452,385
February ...	178	436,045	200	453,899
January ...	168	399,903	183	443,303
Dec., 1920...	202	520,346	212	507,810

Boston

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	94	239,170	61	134,039
November ...	62	137,585	80	180,940
October ...	99	229,800	67	158,695
September ...	88	197,208	69	144,268
August ...	100	280,687	63	102,032
July ...	98	178,403	81	115,503
June ...	138	211,667	100	119,945
May ...	122	190,148	87	98,008
April ...	101	217,080	71	133,952
March ...	99	306,454	49	113,184
February ...	74	260,502	46	119,847
January ...	72	175,052	50	125,904
December, 1920.	66	178,656	51	128,439

Mobile

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	85	194,757	87	216,233
November ...	87	104,489	47	86,559
October ...	64	124,089	60	122,949
September ...	55	95,343	46	89,460
August ...	57	108,936	48	83,486
July ...	67	156,801	58	101,850
June ...	53	101,592	51	92,800
May ...	43	67,627	45	71,756
April ...	96	249,996	76	150,776
March ...	79	146,798	56	82,898
February ...	58	105,040	47	89,647
January ...	68	94,273	63	78,109
December, 1920.	97	147,575	74	122,293

Los Angeles

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1921	94	161,393	81	151,450
October ...	68	124,682	76	123,276
September ...	54	128,611	45	119,275
August ...	50	117,775	40	106,243
July ...	45	144,913	34	101,581
June ...	27	100,411	31	100,580
May ...	35	98,885	26	77,036
April ...	32	119,049	28	71,958
March ...	39	99,455	33	94,380
February ...	74	97,252	60	93,544
January ...	60	111,882	86	64,844
December, 1920.	74	60,333	56	61,211
November ...	69	89,143	79	91,763

Key West

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	76	73,276	74	70,169
November ...	70	79,586	67	78,618
October ...	55	66,400	59	67,608
September ...	62	77,229	70	101,948
August ...	65	69,911	59	66,223
July ...	85	89,901	86	87,449
June ...	105	104,326	104	101,494
May ...	100	104,326	104	103,571
April ...	115	117,586	111	114,748
March ...	112	107,736	108	107,083
February ...	124	118,950	120	119,241
January ...	128	146,679	127	142,474
December, 1920.	121	102,611	121	97,733

Portland, Me.

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	29	92,777	32	99,527
November ...	24	37,712	12	16,794
October ...	13	21,191	8	13,652
September ...	10	15,345	12	26,224
August ...	13	17,192	13	14,265
July ...	13	15,195	11	9,597
June ...	15	15,723	12	12,749
May ...	4	8,324	10	8,885
April ...	17	54,804	19	64,310
March ...	24	75,529	25	80,107
February ...	20	66,422	21	73,581
January ...	34	93,933	28	86,559
December, 1920.	36	96,281	31	107,567

Savannah

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921.	4	8,876	14	43,281
November ...	10	19,543	16	44,187
October ...	6	10,417	13	37,447
September ...	3	5,152	19	56,024
August ...	17	33,428	24	55,108
July ...	10	17,469	16	33,712
June ...	11	16,603	13	35,247
May ...	5	9,507	16	36,377
April ...	17	40,418	12	25,543
March ...	13	19,924	14	29,618
February ...	9	14,493	15	32,475
January ...	11	21,591	20	38,179
December, 1920.	22	45,085	26	36,110

Galveston

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	74	220,988	85	255,851
November ...	77	221,217	70	199,885
October ...	72	219,001	77	227,982
September ...	75	214,391	99	295,869
August ...	104	290,372	126	371,472
July ...	75	204,159	92	270,335
June ...	80	220,872	109	320,655
May ...	83	227,518	95	254,287
April ...	90	264,109	106	308,074
March ...	93	254,755	118	292,682
February ...	89	198,834	102	252,398
January ...	104	252,980	136	339,008
Dec., 1920....	126	310,129	132	334,068

Portland, Oreg.

Month	Deep Sea Arrivals		Deep Sea Departures	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921	92	266,763	94	279,862
November ...	89	263,595	92	273,424
October ...	100	302,941	97	292,067
September ...	89	238,484	78	234,287
August ...	91	250,330	91	256,577
July ...	75	236,945	74	229,228
June ...	46	134,342	47	140,328
May ...	53	166,878	51	159,331
April ...	75	170,599	79	178,790
March ...	81	186,397	76	166,382
February ...	55	136,409	57	155,639
January ...	63	171,655	68	188,972
Dec., 1920....	56	132,157	58	151,019

Houston

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
December, 1921...	22	42,359	21	27,001
November ...	23	30,705	27	46,519
October ...	17	36,682	16	32,223
September ...	24	74,633	28	26,929
August ...	24	15,558	21	58,492
July ...	28	39,566	28	54,057
June ...	27	33,405	19	33,187
May ...	19	10,705	20	38,180
April ...	25	44,706	26	43,695
March ...	34	43,102	29	41,095
February ...	13	13,643	15	23,094
January ...	17	22,373	14	19,057

Port Arthur, Tex.

Month	(Exclusive of Domestic)		(Clearances—)	
	No. ships	Net tonnage	No. ships	Net tonnage
November, 1921.	92	286,179	89	263,940
October ...	93	256,932	89	263,993
September ...	87	224,944	92	254,039
August ...	74	193,578	70	167,193
July ...	70	168,438	59	142,181
June ...	76	212,571	85	214,705
May ...	71	193,427	56	141,542
April ...	78	198,616	84	203,895
March ...	108	274,578	99	243,638
February ...	93	249,084	103	267,770
January ...	90	239,240	82	207,079
December, 1920.	80	206,789	89	236,956
November ...	89	238,859	95	226,123
October ...	85	221,948	89	232,589
September ...	82	212,040	87	209,487
August ...	81	211,397	89	224,311
July ...	74	189,976	97	228,542
June ...	85	209,382	98	215,036
May ...	57	127,170	70	155,046
April ...	72	158,063	72	166,230
March ...	68	193,663	80	194,257
February ...	46	104,394	48	114,774
January ...	60	138,888	78	181,715

Two Firms Control Dutch Canal Trade

There are two Dutch lines operating through the Panama canal, the Royal Netherlands West India Mail, which maintains a service between Hamburg, Amsterdam, Rotterdam and the west coast of South America, and the Holland-American line between Rotterdam-London and the west coast of North America. The former company put 30 vessels through the canal during the fiscal year 1921, and the latter 16, out of a total of 50 vessels under the Dutch flag.

The table shows the number of vessels in either direction during the past seven years:

Fiscal year	Atlantic to Pacific	Pacific to Atlantic	Total
1915.....	5	2	7
1916.....	11	4	15
1917.....	36	38	74
1918.....	31	18	49
1919.....	6	13	19
1920.....	17	12	29
1921.....	26	24	50
Totals.....	132	111	243

Of the 26 vessels passing from Atlantic to Pacific during the past year, 16 were bound from Europe to South America with 36,127 tons of cargo, and 10 from Europe to North America. Two of the latter were in ballast, and the remaining 8 carried 9,979 tons of cargo.

Of the 24 vessels passing from Pacific to Atlantic, 13 were bound from South America to Europe with 80,398 tons of cargo, 10 from North America to Europe with 86,284 tons, and 1 from South America to the United States with 3,700 tons. The total cargo from Atlantic to Pacific was 46,106 tons, and in the opposite direction 170,382 tons.

Latest News from Ships and Shipyards

BY MYERS L. FEISER

Several boats, as is the custom, ventured beyond the official close of the navigation season with grain carried at the highest charter rates of the year. Among these vessels were the SIR THOMAS SHAUGHNESSY, the G. A. TOMLINSON, the CHARLES O. JENKINS and the J. J. SULLIVAN. Their performance is credited to the 1921 business, full sta-

The annual meeting of the Lumber Carriers' association was held in Hotel Statler, Detroit, Jan. 17, with C. E. Kremer as toastmaster. Days when lumber was the leading commodity carried on the lakes were recalled.

Lakes	Feet above	mean sea level
	Nov.	Dec.
Superior	602.20	601.99
Michigan-Huron	579.64	579.54
St. Clair	574.55	574.58
Erie	571.80	571.71
Ontario	244.85	244.83

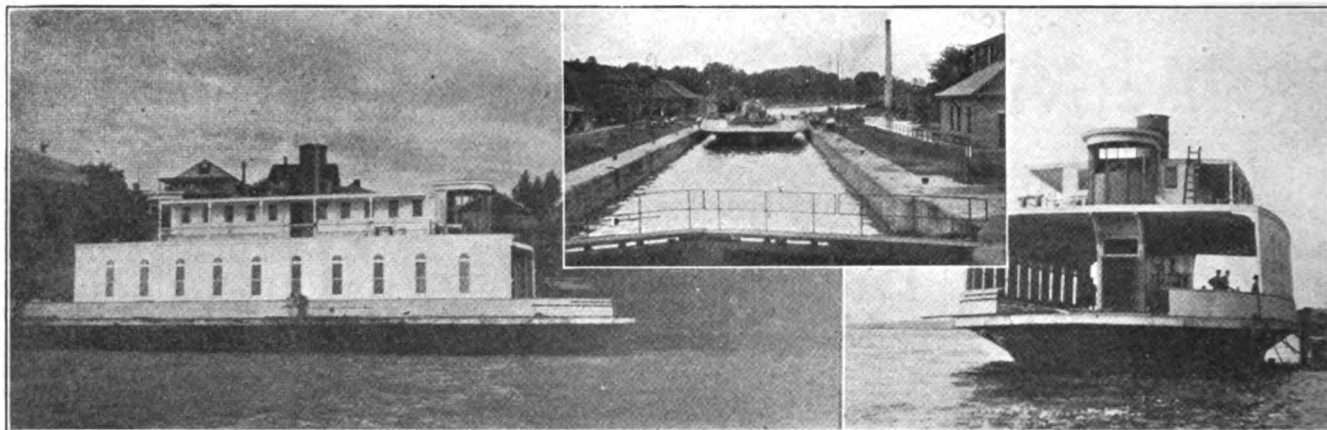
South Breakwater

Harbor Line

Labels on the map include:

- L.W. Hill
- C.A. Thompson
- H.E. Farr
- A.S. Bailey
- F.W. Hart
- Hester A. Sauer
- Singlow
- C.S. B. B. B.
- Boll
- Sierra
- C.C. Berrum
- F.C. Ball
- H. Bowyer
- H.S. Davidson
- Key E. Davidson
- F.L. Ford
- H.K. Oakes
- D. Sherman
- C.S. Williams
- C.S. Robinson
- C.A. Campbell
- J. Selwood
- N.B. Dalton
- W.A. Ambrose
- C. Hanna
- C.L. Replegle

85



DOUBLE-ENDED FERRYBOAT ON NOVEL VOYAGE

This, the first double-ended ferryboat to pass through the new barge canal from Buffalo to Hudson, N. Y., was built by the Anchor Shipbuilding Co., Washburn, Wis. The president of the company, who personally took the vessel to Hudson, counted 196 bridges which he passed under during the trip through the canal. The hull measures 115 feet x 33 feet, 44 inches over the guards, and is 12 feet deep. The engine is of the oil type, of 250 horsepower, giving her a speed of 10 knots. The boat was built for the Hudson & Athens Ferry Co.

ago, and 0.39 foot below the average stage of December of the last 10 years. Lake Michigan and Huron were 0.10 foot lower than November, 0.56 foot lower than a year ago, and 0.62 foot below the average stage of December of the last 10 years. Lake Erie was 0.09 foot lower than November, 0.18 foot lower than a year ago, and 0.09 foot below the average stage of December of the last 10 years. Lake Ontario was 0.02 foot lower than November, 0.57 foot lower than a year ago, and 0.68 foot below the average stage of December of the last 10 years.

Along the Atlantic and Gulf Coasts

FROM present indications it appears the government soon may own the Cape Cod canal. Its purchase for \$11,500,000 was recommended recently by Secretaries Weeks, Denby and Hoover as they agree the acquisition of the canal is desirable and the price reasonable.

All steamers of the Cunard line, from Boston or New York for Liverpool, will hereafter stop at Queenstown, Ireland, according to an announcement of that company.

The Southern railroad has announced an extension of free time on export freight moving through Norfolk, from 48 hours to 7 days, effective Feb. 15. The practice of the southern lines has been to give 48 hours' free time while the western or trunk lines give from 10 to 15 days free time, depending on whether freight is consigned on a through export bill of lading.

Regular service between Port Houston and the Pacific coast will be added to the present sailings of the Texas port according to advice received by the trade extension department of the Houston chamber of commerce from Swayne & Hoyt, steamship operators of San Francisco.

The first move to make Port Houston, Tex., a sugar port brought the steamer HAROLD to that city's municipal docks on Dec. 30 with a cargo of 19,500 bags of raw sugar from Cuba. The cargo was consigned to the Imperial Sugar Co., Sugarland, Tex., and if the handling at Port Houston is found to be satisfactory, officials of the sugar company announce that future shipments will be diverted from

Galveston and routed via Port Houston on a permanent basis. Officials of the company state that the grinding season will require approximately 50 such cargoes as carried by the HAROLD or about 300,000 pounds of raw sugar. The HAROLD is operated by the United Steamship Co., of which Blakely Smith & Co. are Houston agents.

Announcement has been made of the recent incorporation of the Mallory Transport Lines, a steamship company which intends to operate a service from north Atlantic ports to the west coast of Italy and the Adriatic, Canary islands, Portugal, Spain and West Mediterranean, including Marseilles. It is understood that the company was formed for the purpose of taking over the steamers operated by the Baltimore-Oceanic Steamship Co.

The submarine S-48, built by the Lake Co., Bridgeport, Conn., and which was sunk off Bridgeport on Dec. 7, has recently been raised and will be refitted at the New London shipyards, New London, Conn.

Robert B. Mount, Boston, has recently purchased on behalf of a syndicate of buyers the trade name and good will of the Globe line, formerly owned by Gaston, Williams & Wigmore Steamship Co. For the present, services will be operated from New York, but they will be extended to Boston later.

Norfolk, Va., voters on Feb. 7 will pass on the proposed bond issue for \$5,000,000 for construction of additional municipal pier and warehouse facilities and an export grain elevator. Sufficient business is in sight to utilize practically

all of the facilities the city proposes to build.

Hampton Roads port commission has completed its report to the Virginia general assembly with definite recommendations for state participation in port development. Appointment of the Hampton Roads commission was the state's first move toward active participation in port building. The present commission consists of nine members, three of whom were selected from the state senate, three from the house of delegates and three from the state at large. M. D. Maher, president of the Norfolk & Western railroad, is chairman of the commission, and Homer L. Ferguson, president of the Newport News Shipbuilding & Dry Dock Co., is vice chairman.

Three of the shipping board vessels to be used in transporting grain to Russia for the American relief administration have already sailed from Norfolk for New Orleans to load grain. They are the BELVEDERE, BRAVE COEUR and EXPORTER. Three others, CLAIRTON, WEST CHATALA and EFFNA are to be got ready for this service.

Boat passenger service between Norfolk and New York, suspended since 1917, is to be resumed in the spring. The steamers HAMILTON and JEFFERSON are to be refitted as passenger steamers and will be ready for the opening of the season. Purchase of a third vessel by the Old Dominion Transportation Co. is probable.

After having sailed more than a year during which ports in eight countries were visited, the American steamer LA CROSSE is at Camp Eustis. Capt. W.

H. Maxwell of the ship, has gone to his home in New Jersey after reporting to the shipping board that his ship had been kept in such trim that it could embark on a transatlantic voyage without a repair of any kind.

Establishment of a steamship line from Norfolk to the Far East and India is announced by Southgate & Co., local agents for the line. The first ship which is to be run by the Kerr Steamship Co., will be the RAM-DAH's HORN, to sail Jan. 25 for Yokohama.

The Bowker Shipyard, Phippsburg, Me., will resume operations the early part of 1922 after being shut down during the past year. The yard specializes in the building of 4-mast schooners.

After 38 years of service, the U. S. S. DOLPHIN, the original of the famous "white squadron," went out of commission at the Charlestown, Mass., navy yard recently. The DOLPHIN established the record of visiting every naval port of the world, never breaking down at sea, never losing a man through any

cause and suffering only one slight accident during her entire career.

The following junked naval vessels at Portsmouth, N. H., recently were sold: Cruiser BROOKLYN to American Iron & Steel Co., Oakland, Cal., \$41,666.66; collier ASTORIA to Richard T. Greene, Chelsea, Mass., \$30,000; VEGA to C. H. Croker, San Francisco, \$10,000; SMITH to J. H. Hitner, Philadelphia, \$6176; GALATEA to A. A. Tonas, New York, price not named; INTREPID to N. Parker, San Francisco, \$1015; Eagle boat No. 25, to J. G. Hitner, \$1026; ORIOLE to William Mattson, Baltimore, \$237.00; subchaser 264 to Steve Bellos, Mobile, Ala., \$3506; subchaser 430, to Thomas E. James, Philadelphia, \$3100; subchaser 119 to A. A. Tonas, \$1100; subchaser 3 to Edward Sumara, New York \$1255.

Rogers & Webb announce they will inaugurate a new service from Boston to Brazil and River Plate ports. This company is to be the Boston agent for P. Kleppe & Sons, Inc., of Bergen, Norway, which has arranged to place five steamers in this new service. The first

of these will be the steamer CORONE from Buenos Aires. A regular service will be maintained at about monthly intervals.

Rumors to the effect there was to be a merger of the North Atlantic & Western Steamship Co. and the Intercoastal Sea Carriers, Inc., each of which is operating a service from Boston to Pacific coast ports, are without foundation, it is announced.

A new direct passenger and freight service from Boston to Havana, Cuba, and Kingston, Jamaica by the Canadian Pacific railway is the latest addition to the various lines of the port of Boston. This service is to be maintained by the steamer SICILIAN, which has recently been refitted for this service.

Leopold Walford, Ltd., London, recently appointed the Old Colony Shipping Corp., Thomas F. Smith, president, as its Boston agent. This company owns or operates approximately 80 vessels, and it is expected about 20 to 22 of them will go to Boston from various ports during the next 12 months.

Up and Down the Pacific Coast

REPORTS from Vladivostok received at Seattle indicate an improvement in conditions in Siberia. An early resumption of heavy traffic through Vladivostok is expected. The government has raised no obstacles to the importation of foreign goods nor are any difficulties placed in the way of commerce. Agents of a Russian engineering company in this country are contemplating heavy purchases of American machinery, tools, machine supplies and agricultural implements.

With the view of utilizing the refrigerator space now available from north Pacific ports throughout the year, port of Seattle officials are trying to stimulate the movement of mutton, lamb and wool through local municipal terminals. Heretofore refrigerator space both at terminals and in steamships has been used only part of the year for apple shipments. However, if Seattle is established as a distributing center for sheep and mutton, tonnage for the refrigerator ships will be furnished throughout the entire year. Conferences on the subject are in progress with raisers in the eastern part of Washington.

Intended to prevent a possible disaster by which Lakes Washington and Union in the city of Seattle would be emptied into Puget sound, the government intends to construct an emergency dam at the Lake Washington ship canal shortly. Bids were recently opened, the lowest bidder being the Dravo Construction Co., Pittsburgh. The bid was \$311,492.

Capt. John Alwen, master of the shipping board freighter WEST HARTLAND which collided with and sunk the passenger steamer GOVERNOR in Puget sound

waters last April, has brought an equity action against steamboat inspection officials enjoining them from revoking his license. Captain Alwen alleges that the original investigation exonerated him and that subsequent inquiries which placed the blame on him were at fault.

Shipments of lumber from Washington and Oregon to Japan during 1921 amounted to approximately 200,000,000 feet or about 50 full steamship cargoes. This breaks all previous records. Shipments to the same country in 1920 were 77,000,000 feet while in 1919 Japan imported 39,000,000 feet of north Pacific forest products.

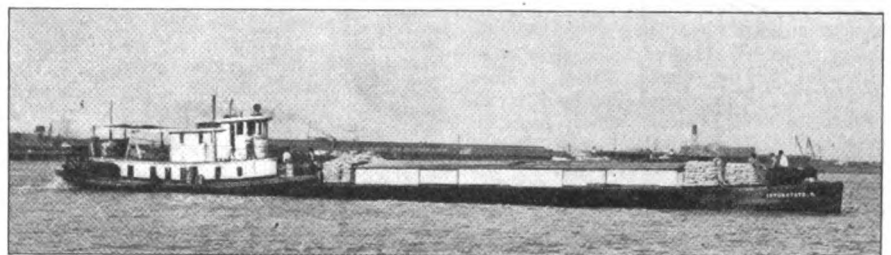
Patent on a ship's ventilator screen which it is claimed will exclude all spray or rain but still permit air to pass into the ventilator, has been issued to T. M. Brown, 6403 Ninth avenue N. E. Seattle. The screen fits over the bell of

the ventilator. It consists of three series of flat bars with flanges extending inward from the two outer rows. The invention has been tried on several transpacific vessels of the Admiral line and is said to have been commended by officials of that company.

The port of Seattle has entered into a new contract for a year with the Gray-Rosenbaum Grain Co. for the use of the port's grain elevator. The new contract followed a successful temporary use of the terminal in handling bulk grain.

While towing the schooner ECOLA along the Oregon coast, the tug SEA EAGLE was swamped by a terrific wave and sank before any of the crew could be saved. The ECOLA proceeded under sail but the weather was so severe that the vessel failed to make port for nearly three weeks.

The Portland, Ore., dock commission's



DELIVERS GROCERIES BY WATER ROUTE

A striking example of the relation of inland waterways to the commercial life of a community is furnished by the Interstate Wholesale Grocers, Inc., New Orleans. This firm owns and operates 11 wholesale groceries at various points in Louisiana and Mississippi and transports merchandise from New Orleans to those located at Houma, Thibodaux and Lockport, all in Louisiana, by its own power boat and barge line. Several months ago, the corporation started a water service of its own with the power boat F. T. NICHOLLS, as shown towing Barge 3. Soon after two barges were added and the third recently left New Orleans on its first trip. Barge 3, or INTERSTATE 3 as it is named, has a carrying capacity of 150 tons and was built entirely of cypress lumber at Lockport, La. It measures 108 feet over all, 20 feet across the beam and was constructed to draw only 4 feet of water when loaded

report for the fiscal year ended Nov. 30 shows that 3936 loaded cars were received and 1289 cars loaded out. Export freight handled consisted of 11,948,000 feet of lumber, 8,170,000 feet of logs, 188,037,033 pounds of wheat, 22,048,000 pounds of flour, 312,565 boxes of apples, and 773 measurement tons of miscellaneous cargo.

Puget sound ship operators recently held a secret conference with F. W. Relyea, district director of the shipping board, at which an earnest plea was made that the Puget sound district be placed on an equal footing with San Francisco.

Japan has taken practically one-third of the wheat and flour exported from Washington and Oregon this cereal season. From July 1 to Dec. 1 shipments of wheat and flour were 35,928,917 bushels of which the Far East took an equivalent of 10,716,000 bushels.

Extension of Portland's water terminals will be begun at once and the former site of the Willamette Iron & Steel Works is to be included in the additional frontage. This enlargement of the terminal will provide berths for seven instead of four ocean steamships.

Cable advices state that the Nippon Yusen Kaisha on Nov. 28 declared a dividend of 20 per cent for the six months ended Sept. 30. For the previous six months the company paid a dividend of 25 per cent.

Construction of a 3000-foot pontoon bridge, consisting of 12 hulls of wooden ships placed stem to stern, has been pronounced feasible by the Seattle chapter of the American Association of Engineers. The plan is to purchase the hulls from the shipping board which has more than 40 wooden hulls at Seattle and to join the mainland with Mercer island in Lake Washington. The estimated cost is \$310,000 and by the proposed plan an expensive ferry system would be eliminated. It is proposed to sink the hulls to the desired level by filling the holds with water. The engineers figure that the hulls will last at least 25 years in fresh water.

An interesting decision has been handed down by the federal court at Seattle which holds that the shipping board is not responsible for seamen's wages on a vessel operating under private ownership although the craft was purchased on time payments from the government. The court holds the master, Capt. T. Hedmark, personally responsible for the men's claims, a total of \$14,000. The vessel involved is the wooden steamer *Agkon* which met financial difficulties in the south Pacific. At Balboa, the craft was libelled and sold to satisfy a salvage claim which the court holds was illegal.

Replacing the famous cable steamer *BURNSIDE*, which for 20 years has been employed out of Seattle to keep the Alaska cable in repair, the shipping board has turned over to the war department the steel steamer *DELLWOOD* which is now stationed at Seattle. The *BURNSIDE* was formerly a Spanish merchantman and was captured during the Spanish-American war. She

has long been obsolete. The *DELLWOOD* was built during the war and is well equipped for this special service.

The Self-Bailing Life-Boat Co. has contracted with the Puget Sound Sheet Metal Works, Seattle, for the manufacture of the self-bailing life-boat known as the Togerson type for the entire United States. This equipment will be turned out at the Seattle plant which during the war built a large number of life-boats and rafts for the government fleet. All sizes will be manufactured from the popular type of 20 to 24 feet in length to the larger craft which will accommodate 54 persons.

The extent of Columbia river wheat shipments is shown by figures covering the number of grain ships cleared between July 1 and Nov. 30. This report shows that in the five months, 112 ships were dispatched with grain or flour, their nationalities being as follows: Japanese, 43; American, 28; British, 22; Dutch, 8; Norwegian 6; Greek, 3 and Spanish, 2.

The Union Construction Co., of Oakland, Cal., announces the purchase of four steamers from the Standard Oil Co. of New Jersey, negotiations having been completed by Walter Johnson, president of the Union company. All of the vessels are cargo-carriers, built on the Great Lakes. No announcement has been made as to what use the Union company will make of them. They are *DAWN-LITE*, 1976 tons, built in 1916; *DAY-LITE*, 1976 tons, built in 1917; *MOON-LITE*, 7955 tons, built in 1916, and *SUN-LITE*, 1976 tons, built in 1916.

The new Associated Oil Co. terminal in Alameda, on the east shore of San Francisco bay, was opened for business late in December. Facilities for handling steamers of 25 to 40-foot draft have been provided, and the terminal is intended to provide fuel oil for both coastwise and offshore craft. The first supply of oil was of 50,000 barrels, delivered by the tanker *FRANK H. BUCK*. This is the first complete oil supply terminal installed in the east-bay section.

The Standard Coal Co. will open by the middle of January a large coaling station, equipped with traveling electric cranes and other modern equipment for bunkering vessels. This terminal will be located in Alameda, near the Associated Oil Co.'s terminal.

The Pacific Steamship Co., which operates the Admiral line fleet, will get the steamer *NORTHERN PACIFIC* from the shipping board, according to announcement by Hugh Gallagher, new district manager of the company. The *NORTHERN PACIFIC* was built in 1915, by the Cramp shipyard for the Northern Pacific Steamship Co. She is 509 feet long, 63 feet beam, 50 feet deep and has a gross of 8255 tons. The Pacific company plans to put the big steamer in intercoastal service, according to Mr. Gallagher.

The board of marine fire underwriters announces that it is planning to purchase and equip a wrecking steamer, to be ready for immediate service on San Francisco bay. It is planned to

expend \$100,000 on the boat, \$25,000 on the hull and \$75,000 on equipment. Capt. Cecil Brown, surveyor and wrecker for the board, will be in command.

The California state railroad commission has opened an inquiry into the possibilities of the joint use of the Oakland mole by the Southern Pacific, now using it, and the Santa Fe railroad companies, as a ferry terminal on the east side of San Francisco bay. W. B. Campbell, assistant engineer for the commission, testified that by this joint use, an annual saving of \$396,000 would be effected. The Southern Pacific is opposing the joint use of the mole, and the people of Richmond, a town on San Francisco bay, also are opposing it, since they believe if the new plan were adopted, it would mean the abandonment of the Santa Fe terminal at Richmond.

Sudden & Christenson announce the purchase from W. R. Grace & Co., of the steamer *SANTA ALICIA*, which will be added to the firm's lumber fleet, making it one of the largest on the Pacific coast. The firm recently purchased the steamer *KATHERINE G. SUDDEN*, which was under the Norwegian flag during the war. Each of these steamers has a capacity of 2,000,000 feet of lumber. Two other steamers of the Grace line, *SANTA RITA* and *SANTA INEZ*, were purchased recently by Crowley & Mahoney for the coast lumber trade.

The Compagnie Generale Transatlantique, the French line, which recently inaugurated a new freight service between San Francisco and European ports, announced late in December that it is now in a position to open up new markets in the islands of the West Indies, the Guianas, Venezuela and the Atlantic coast of Colombia. This service is possible because the French line has its own wharves and coaling station at Martinique, and operates from that port a fortnightly service to Trinidad and to Colombian and Venezuelan ports, as well as an intercoastal service to Santa Lucia, Trinidad, Georgetown, Paramaribo, and Cayenne. A monthly service from Martinique to Santo Domingo, Port au Prince, and Santiago de Cuba also has been established. The Texas Transport & Terminal Co. has been appointed Pacific coast agent for the new service.

Williams, Dimond & Co., have turned back to the shipping board the steamers *WEST FARRALONE* and *EASTERN MERCHANT*, which arrived in San Francisco from Europe about the middle of December. The vessels have been operated in the European-Pacific service of the company, which is now operating the ships of the United American lines.

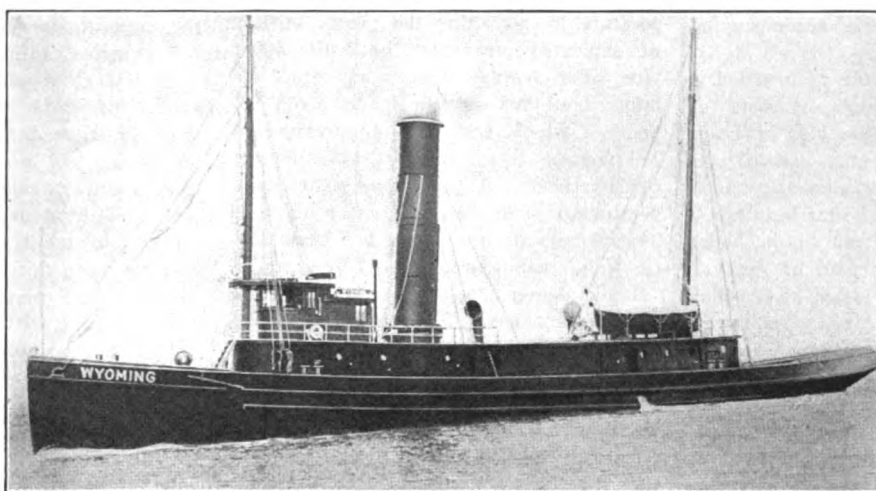
Contract for the diesel engines for the first of the Golden Gate Co.'s ferry-boats, has been awarded to the Pacific Diesel Engine Co., San Francisco, which will install two 525 brake-horsepower Werkspoor diesel engines in the automobile ferry now under construction at the James Robinson shipyards in Alameda, Cal. The boats, of which there are to be two, will carry 85 automobiles each, and will operate between San Francisco and Sausalito, on the northern shore of the Golden Gate.

Practical Ideas for the Engineer

Results of Tests on Efficiency of Superheated Steam—How Chief Officer Can Cut Expenses

FUEL economy, increased capacity, greater operating efficiency and freedom from maintenance troubles—advantages claimed for the firetube superheater—have been carefully checked by the operation of high degree superheat on the sea-going tugs, WYOMING, PERTH AMBOY and LEHIGH, formerly owned by the Lehigh Valley railroad and now owned and operated by the Bee Line Transportation Co.

The WYOMING, a vessel of 398 gross tons, 152 feet long, 27 feet 3 inches beam, and 16 feet draft, with a towing capacity of 5000 tons, was the first American boat operating in American waters to be equipped with fire tube superheaters. The WYOMING was superheated in June, 1915, by the Superheater Co. which was then the Locomotive Superheater Co. In November, 1916, after a series of operating tests on the WYOMING had shown a coal saving of 15.6 per cent, and an increase in capacity of from 865 indicated horsepower on saturated steam, to 908 indicated horsepower on superheated steam, a second tug, the PERTH AMBOY, was equipped with the same type of superheaters. Similar and even



TUG WYOMING ON WHICH SUPERHEATED STEAM TESTS HAVE BEEN MADE

more careful tests were run on the PERTH AMBOY, and the results compared with saturated steam operation under identical conditions. Superheated,

cated horsepower on saturated steam. On the LEHIGH, the fuel saving proved to be 17 per cent.

A recent report by the Superheater Co.

the PERTH AMBOY developed 887 indicated horsepower against 775 indicated horsepower on saturated steam. A fuel saving of 15 per cent was shown. The LEHIGH, the third of the fleet, was equipped with the same kind of fire tube superheaters in March, 1917. The LEHIGH, after superheating, developed 803 indicated horsepower against 633 indi-

cated horsepower on saturated steam. On the LEHIGH, the fuel saving proved to be 17 per cent.

A recent report by the Superheater Co.

points out that any doubts as to the practicability of the fire tube superheaters, for use on this type of vessel are removed by the performance and maintenance records of these superheater-equipped tugs. Over considerable periods of continuous operation, six years in the case of the WYOMING, five years on the PERTH AMBOY, and about four years on the LEHIGH, maintenance costs on the superheater equipment of these vessels have been practically nil. No trouble has been experienced, it is said, through the use of cylinder lubrication. The PERTH AMBOY has run two and one-half years on one set of rings in the high-pressure cylinder, with 180 degrees of superheat. All three ships

Comparative Performances, Saturated and Superheated Steam, of Lehigh Valley Railroad Tugs in Towing Service

	—Lehigh—		—Perth Amboy—		—Wyoming—	
	Sat. steam	S. H. steam	Sat. steam	S. H. steam	Sat. steam	S. H. steam
Duration of test.....	46.92 hr.	85.50 hr.	47.58 hr.	54 hr.	....	138.53 hr.
Number of barges.....	3	4	3	3	3	3
Total tonnage of tow.....	3451	5149	3322	3502	....	3251
Boiler press. (lb. sq. in.) (av.)....	173	173	186	187.5	175*	175*
M. E. P. H. P. cyl. (lb. sq. in.)..	76.9	95.2	63.5	82.8	79.9*	79*
M. E. P. I. P. cyl. (lb. sq. in.)..	33.8	37.6	40.6	39.7	33.3*	36.5*
M. E. P. L. P. cyl. (lb. sq. in.)..	9.8	12.55	13.7	15.4	10.4*	12.5*
Ref. M. E. P.....	32.3	38.6	37.9	42.5	33.7*	37.1*
Vacuum (inches) (av.).....	23.5	23.4	24.3	24.8	26*	25*
R. P. M.....	87.7	92.3	93	94.8	117*	111*
I. H. P.....	633	803	775	887	865*	908*
Max. I. H. P. (no tow).....	....	....	....	....	....	....
I. P. rec. press. (lb. sq. in.) (av.)	53.8	58.4	72	65.7	....	....
L. P. rec. press. (lb. sq. in.) (av.)	5.9	6.85	16.4	15.4	....	....
St. tem. at throttle (av.).....	376 F.	575 F.	382 F.	590 F.	377 F.	570 F.
St. tem. at throttle (max.).....	376 F.	625 F.	382 F.	608 F.	377 F.	590 F.
Draft (stack base) (in.) (av.)....	.34"	.34"	.31"	.28"	....	....
Temp. flue gas (stack base) (av.)..	527 F.	385 F.	456 F.	362 F.	....	444 F.
Temp. feed water (av.).....	233 F.	230 F.	222 F.	224 F.	....	207 F.
Temp. hotwell (av.).....	118 F.	112 F.	117 F.	119 F.	....	120 F.
Temp. L. P. rec. (av.).....	229 F.	233 F.	....	244 F.	....	....
Fuel.....	Anthracite coal	Anthracite coal	Anthracite coal	Anthracite coal	Anthracite coal	Anthracite coal
Fuel B. T. U. per lb.....	12758	11166	12483	12423	....	....
Fuel per hr. lb.....	1450	1520	2024	1968	1428	1205
Fuel per hr. per sq. ft. grate....	16.15	16.85	18.6	18.1	16.5	13.9
Fuel per I. H. P. hr.....	2.29	1.90	2.61	2.218	....	....
Fuel economy per cent.....	....	17%	....	15%	....	15%*
Indicated thrust.....	17650	21300	20272	22900	....	....
Hull dimensions.....	136x26x13-4	....	140x29x16-5	....	140x27x16	....
Hull gross tons.....	446	....	452	....	398	....
Engine—type.....	Triple expansion	....	Triple expansion	....	Triple expansion	....
Engine diam.-cyls.....	16 1/2"x25 1/4"x43 1/4"	....	17 1/2"x25"x43"	....	17"x25"x43"	....
Engine stroke.....	30"	....	30"	....	30"	....
Boiler—type.....	S. E. Scotch	....	S. E. Scotch	....	S. E. Scotch	....
Boiler number.....	One	....	One	....	One	....
Boiler pressure, allowed.....	180 lb. sq. in.	....	190 lb. sq. in.	....	180 lb. sq. in.	....
Boiler, number furnaces.....	Four	....	Four	....	Four	....
Boiler grate area (total).....	90 sq. ft.	....	108.5 sq. ft.	....	86.6 sq. ft.	....
Boiler, total evap. surface.....	3066 sq. ft.	....	3228 sq. ft.	....	2926 sq. ft.	....
Boiler draft.....	Natural	....	Natural	....	Natural	....
Propeller, number blades.....	Four	....	Four	....	Four	....
Propeller diameter.....	10' 0"	....	10' 6"	....	10' 0"	....
Propeller pitch.....	13' 6"	....	13' 6"	....	13' 6"	....

*Light vessel, no tow.

average 60 to 70 hours on one quart of oil in the forced feed lubricators. Recent examination of the rods, rings and cylinder liners of these superheated tugs showed them all to be in excellent condition.

Comparative performances of the Lehigh tugs on saturated and on superheated steam are shown in the accompanying table.

The fire tube superheater, as installed in these Lehigh Valley tugs, consists of three pairs of collector castings or headers, located at the uptake end of the boiler, each pair of headers being connected to a group or nest of superheater unit pipes, which run in and out of the boiler smoke tubes. Of each pair of headers, one takes the saturated steam as it comes from the boiler and transfers it to the superheater units; the other receives the superheated steam after it has passed through the units on its way to the engines.

In this superheater, there is a total of 80 units, arranged in three groups, corresponding to the number of pairs of headers. These groups, each made up of

a saturated and a superheated header, with a system of units, are independent in their action, being separated from each other by valves, which can be closed if necessary.

The degree of superheat obtained can be governed by a mixing pipe, which keeps the superheated steam at any desired temperature by admitting the proper amount of saturated steam to the main steam pipe. The average steam temperature obtained with this superheater is about 565 degrees, which, with a steam pressure of 180 pounds, is equivalent to 185 degrees of superheat. A maximum steam temperature of 620 degrees, corresponding to 240 degrees of superheat, has been successfully maintained.

High degree superheat and fire tube superheaters have been employed extensively in European marine service for many years. It is interesting to note that the first American shipowner to equip a vessel with fire tube superheaters was an American railroad on which high temperature superheat and superheaters had come to be regarded as essential to efficient, economical locomotive operation.

goes on, with the more efficient handling of the ships so that they get a quicker turn-round.

Of course, the mate can usually apply to the master before doing anything, but then the man who knows his job dislikes to be always running to "the old man" and equally dislikes the captain always interfering.

To insure things running smoothly with the chief officer taking an interest in his work, the captain would be wise to leave the mate alone, as long as things are going right. The captain should never interfere with the men and, of course, never criticize his officers in front of them. He would also be wise not to make a great fuss about small matters.

I was once with a master who would go roaming around until he found, perhaps, a loose rope-yarn. The chief officer would be called from whatever he was doing; a consultation called; the bo'sun sent for and the offending yarn duly removed. He would also vary the work the mate had laid out. He took such an active and contrary interest in his ship that before very long the mate got disgusted and just kept his watch. Can one blame him?

Granted, the chief officer gets good wages, but with the right man it is not altogether a matter of money. This type would work just as well for \$100 as for \$400. Good money, however, attracts good men to the profession and keeps up the standard.

It is the judicious use of constructive criticism and of appreciation that gets the best results from any man. Some will react more to the one than the other, but as a general rule it is the latter that has the greatest effect.

All men and women are amenable to flattery, and whereas cross words from the marine superintendent will rankle in the mate's mind during the voyage, giving rise to self pity and lack of interest, a few commendatory remarks will bring about a cheerful frame of mind, which is health giving and produces energy and keener interest in the work.

Which brings us to the thought that it would be better if more frequent and freer intercourse took place between the officers and the superintendent.

It would be an excellent plan, if the owner or managing director would go aboard occasionally, not to make state visits, but just to drop aboard and have an informal chat with his executives. They will all work the better for knowing the man for whom they are doing it. It is so necessary that all should pull together, especially in this latter era, when there are no more fabulous freights and economy is necessary.

Saving the Ship Money

Chief Officer Has Many Opportunities To Cut Down Expenses
—Shore Executives Can Win Loyal Service from Mates

BY CAPT. E. ARMITAGE McCANN

NO SANE man would ever accept the position of chief officer or mate of a vessel unless it was the stepping stone to the position of master. The mate is the hardest worked man on the ship, with the greatest responsibility for details, that make for the welfare and smooth running of the vessel.

The master has, of course, the ultimate responsibility for everything aboard, including the navigation, which is after all the greatest, and the mate can always turn to him in time of trouble, but the master works on a bigger scale from a higher level, which means less work and less worry.

On the other hand, the mate has an infinity of detail to watch constituting the supervision of the entire deck department and the handling of the crew so that their work shall be efficient and their welfare assured. He has to see that everything on deck is ship-shape, his gear in good working order, that the vessel is kept clean and painted within and without, and that many vexatious rules as to fire protection, boats and the like are complied with.

He has to order the deck stores and keep a wary eye on them, that they are in good order and used economically.

He has to attend to all cargo out

and in, see that it comes aboard in good condition, is properly stowed and handled with care, is not broached. He has to sign the receipts. To a large extent rests upon him the quick dispatch of a vessel and the turning out of a good cargo. The fresh water and ballast tanks require regular attention.

On top of this he has to keep his watch and do some navigation, frequently quite a lot, especially if the master is a bit shaky on this. He must also be able to make long weather forecasts, as this is invaluable for the deck work.

He is supposed to get some sleep and at the voyage end present a small overtime bill.

This overtime is always a vexed question; not so much his own, as if he were to put down one half the overtime he works, he would promptly have to look for another company.

It is the men's overtime about which any trouble usually arises. Ships have to be shifted out of working hours, because the cargo was not finished or the tugs did not arrive on time or for one reason or another. Stores arrive in the lunch hour and have to be got out of the rain, or essential work has to be done for the good of the ship. This overtime will increase as time

Equipment Used Afloat, Ashore

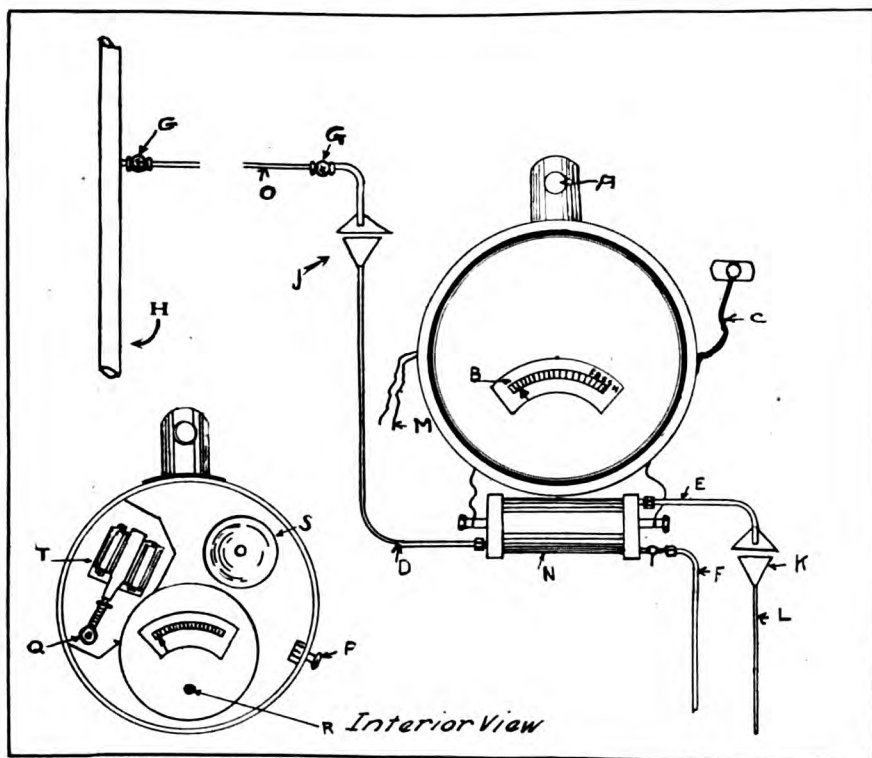
Salt Detector—Motor Driven Ferry—Automatic Shackle

SALT in boilers generally is admitted to be highly objectionable because of the reduced steaming capacity which results from the deposits of salt on the heating surfaces, and also because of the danger of overheating. In the case of the water tube boiler, where even a small deposit of salt may have serious consequences, greater precautions are generally taken to keep the feed fresh, than with the Scotch multitubular type of boiler. Inattention to the boiler feed water will result in the loss of that economy so much desired, as more money can be spent or wasted, on the boiler than on any other part of the ship. It has been found that about 1/16-inch of clean lime scale deposit on the heating surface of a marine boiler will increase the fuel consumption about 15 per cent and that the consumption of fuel increases almost in direct proportion to the thickness of the scale.

The presence of salt in the boiler principally is due to leaking condenser tubes or evaporator priming. In the ordinary course the water may be tested by a salinometer, which gives the amount of salt contained in the water after it has entered the boiler. The McNab Co., Bridgeport, Conn., has developed a salt detector which indicates the amount of salt entering the boiler through the feed line. Its working is based upon the principle fresh water has a high electrical resistance, which falls rapidly if certain compounds, of which salt is one, are added to the water. Contained within the salt detector a meter is arranged which indicates the amount of salt in grains per gallon that may pass through the feed line. Further, an incandescent lamp is arranged which will glow at two grains of salt per gallon in the feed water, the glow of the lamp increasing to a bright light as the density of the feed increases. As a further warning to the engineer, an audible alarm is arranged within the detector, which can be set to a fixed percentage of density. This alarm will sound just as soon as that fixed density passes through the feed line.

The salt detector has two electric connections and three water connections. A large black wire, *C*, on the right hand side is to be connected direct to switch-board. This connects with a direct current circuit. The two small wires marked *M* on the left hand side lead to the alarm bell, and should be connected to a dry cell battery.

Water connections: Connection *D* is



ARRANGEMENT OF SALT DETECTING DEVICE

the inlet from the feed line. Connection *E* is the overflow to feed tank. Connection *F* is drain to bilge.

When the instrument with its wiring and piping has been installed, it may be adjusted to "fresh" reading by removing the glass and the metal dials. The reservoir should be filled with fresh water at 100 degrees Fahr., the current switched on, and the installation set to the fresh water mark on the scale of the meter. This can be done by simply adjusting the screw, *R*, which will be found near the center of the front of the meter case. The bell *S*, may be adjusted to ring at any desired number of grains per gallon by tightening or loosening the nut, *Q*, attached to spring on bell relay, *T*. When these adjustments have been made and cock in line *F* closed, the feed may be turned on, and as soon as the water covers the two terminals the hand will register the number of grains per gallon in the water passing through the container.

Replaced by another vessel of the lake type on the Baltimore-New York run, the steamer LAKE BRIDGE, operated for about a month by the Halschaw Steamship Co., recently made Newport News to be turned back to the board.

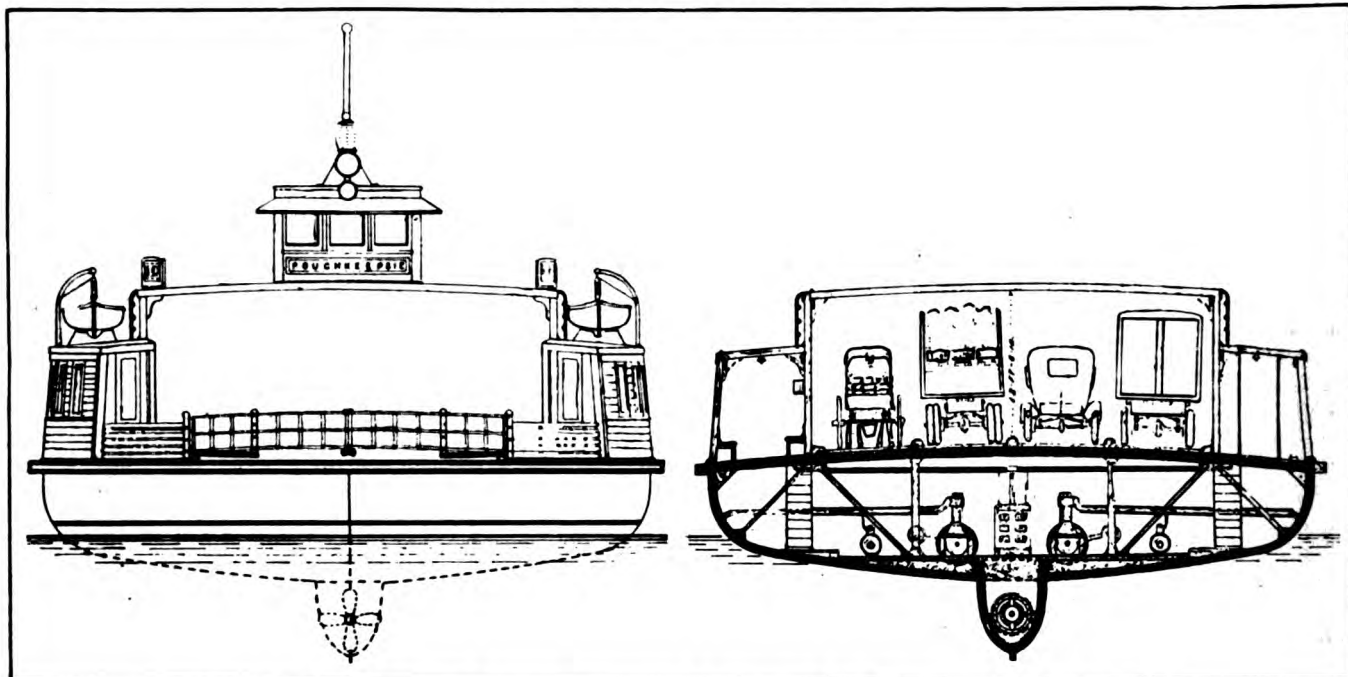
Sets Power Record for Electric Battleships

The U. S. S. CALIFORNIA, latest electrically driven battleship of the American navy, broke all power records for capital ships with electric drive during her recent official sea trials off the Pacific coast.

The CALIFORNIA developed more horsepower for propulsion than her original contract requirements for a speed of 21 knots. Specifications called for a maximum of 33,000 horsepower while the ship actually made 37,150. The trials which took place off San Pedro, Cal., were declared successful in every respect. The ship also exceeded her contract speed making 21.7 knots at maximum speed which was 0.7 knot better than her specifications.

Following her trials, the CALIFORNIA became flagship of the Pacific fleet taking this honor over from the U. S. S. NEW MEXICO. Capt. H. J. Ziegemeier, Commander W. A. Smead, executive officer, and Commander B. Bruce, engineering officer, were much pleased with the satisfactory showing of the vessel.

The CALIFORNIA is the last of the 14-inch gun ships and sister ship to the TENNESSEE. She was built at the navy yard, Mare Island, Cal. The ship is 600 feet long with a beam of 97 feet and a



DIESEL ELECTRIC DRIVEN FERRY SPECIALLY DESIGNED FOR HUDSON RIVER SERVICE

displacement of 32,500 tons. Her propulsion equipment, which was manufactured by the General Electric Co., Schenectady, N. Y., consists essentially of two 11,000-kilowatt turbo generators and four

7000-horsepower motors direct-connected to the four propeller shafts. Complete electrical equipment is provided for the operation of auxiliaries and motor driven apparatus throughout the ships. W. C.

Watson, K. L. Roberts and A. W. Dull representing the General Electric Co.'s marine engineering and turbine engineering departments were among those who witnessed the trials.

New Hudson Ferry Is To Be Motor Driven

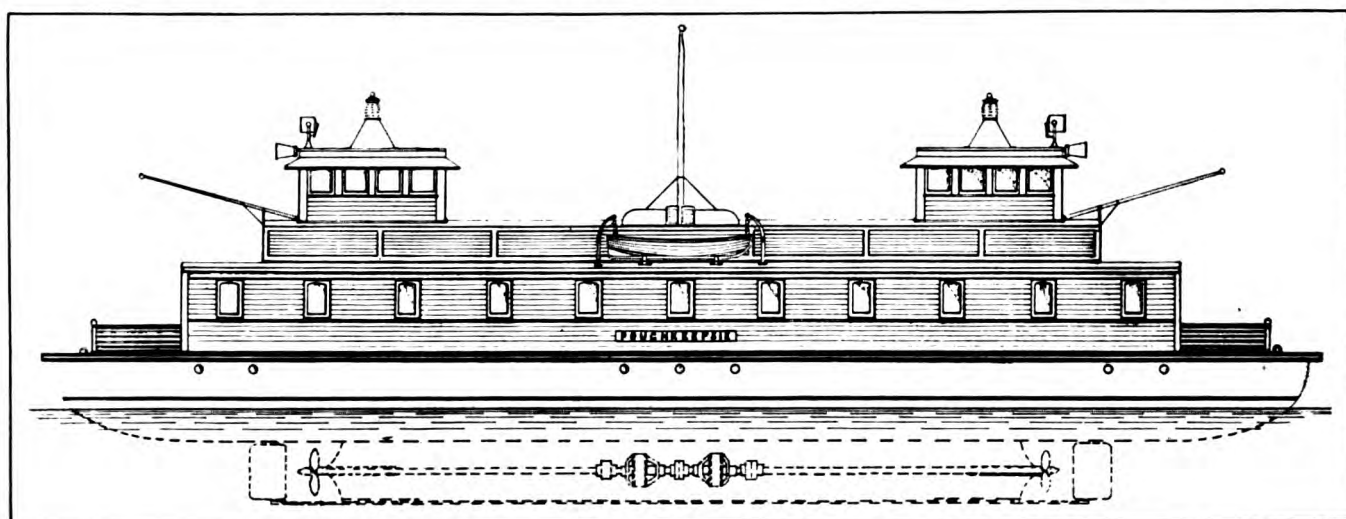
FIRST diesel electric driven ferry boat to ply between Poughkeepsie and Highlands on the Hudson river is the **POUGHKEEPSIE**. She was designed by C. V. S. Wyckoff, naval architect, and is being built for the Poughkeepsie & Highland Ferry Co. by the Atlantic, Gulf & Pacific Co., Mill Basin, Brooklyn, N. Y. She will have a length over guards of 140 feet; beam over guards of 52 feet; beam of hull at water line of 46 feet;

draft of 9 feet; displacement of 400 tons; and speed of 12 knots. Her hull will be steel and her superstructure wood.

Her propelling machinery, as specified, will consist of two 150-horsepower 6-cylinder Winton diesel engines of 450 revolutions per minute, each of which will drive a 90-kilowatt Westinghouse generator. Her two propellers, which are to be normally rigidly connected together, will

be driven by two 100-horsepower Westinghouse motors. Either or both engines and either or both propeller motors can be used at any time.

Another feature of the **POUGHKEEPSIE** is that her hull will be the first to be built according to a specially patented design. As shown by the illustrations, she will have a comparatively shoal hull with a "hull-fin" below. This hull-fin, which is patented by Capt. Samuel Golden, is

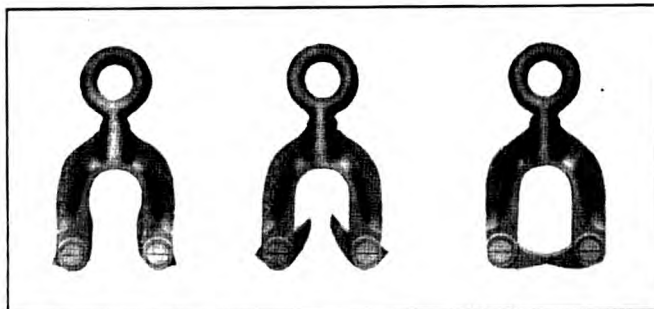


PATENTED HULL DESIGN TO KEEP PROPELLERS CONSTANTLY IMMersed

designed to keep the propellers always immersed in solid water, thus increasing their efficiency. It also is intended to permit the propellers to be operated at the unusually high speed of 600 revolutions per minute. Another advantage claimed for this design is that it possesses a high degree of stability. In this system of design and construction patented by Frank Nichols

and to be used for the POUGHKEEPSIE's hull, all the relative transverse sections are arcs of the same radii. This is said not only to reduce the cost of construction, but by always presenting an arc of the same circle to the water along the entire length of her hull, it reduces the wave-making resistance.

The main engines and generators will be located in the hull, which is 10 feet in depth and 3½ feet in draft. The propeller motors and propeller shafting will be located in the hull-fin, which is 5½ feet in depth. The POUGHKEEPSIE is to be in service by next spring.



SAFETY SHACKLE IN OPEN, HALF OPEN AND CLOSED POSITIONS

Automatic Shackle

A safety shackle which is said to be instantaneous in its operation is shown in the accompanying illustration. The device is a product of the Ford Chain Block Co., Philadelphia. This shackle is designed so as not to come loose from the load when there is slack in the hoist rope or chain. It can be attached or released with one movement of the operator's hand. It can be used to take hold of ropes, chains, rings, handles of ladles, or any place where a hook can be used. There is no point to catch or foul on obstructions.

This shackle can be used on cranes,

derricks, chain blocks for handling ships' cargoes, stone and structural steel. It is made in sizes of 1, 2, 3 and 5 tons.

The junior prize of the American Society of Mechanical Engineers for 1921 was awarded to S. Logan Kerr, of William Cramp & Sons Ship & Engine Building Co., Philadelphia, in recognition of his paper on the "Moody Ejector Turbine." The student prizes for the best paper submitted by members of the society's student branches in 51 American colleges and technical schools, went to Karl H. White of the University of Kansas on his paper on "Forces in Rotary Motors," and to Richard H. Norris and Albert J. R. Houston, jointly, of the University of California, for their paper on "A Report Upon an Investigation of the Herschel Type of Improved Weir." Forrest Nagler, a hydraulic engineer of Milwaukee, was awarded a life membership in the society for his paper.

Business News for the Marine Trade

Capitalized at \$100,000, the Communipaw Barge Corp., Bayonne, N. J., recently was incorporated by Andrew C. Knowler, Godfrey Cohen and Jerome E. Malinow.

The Mallory Transport Lines recently was incorporated in Delaware with a capital stock of \$10,000. The company is represented by the U. S. Corporation Co., Dover, Del.

The Oil Transport Co. recently was incorporated in Delaware to operate vessels, etc., with a capital stock of \$5,000,000. The company is represented by the Delaware Registration Trust Co., Wilmington, Del.

The C. S. Holmes Shipbuilding Co., Seattle, was recently organized by C. S. Holmes, formerly resident agent at Seattle for Struthers & Dixon. The new company will act as agent at the port of Seattle for the Intercoastal Sea Carriers, Ltd., with offices at 321 L. C. Smith building.

Incorporation papers have been filed by the Sterling Steamship Co. which was recently chartered in Delaware with a capital stock of \$1,000,000, by the U. S. Corporation Co., Dover, Del.

The Merrill Stevens Dry Dock & Repair Co. recently was incorporated in Delaware with a capital stock of \$50,000. The company is represented by the Corporation Service Co., Wilmington, Del.

The American Steam Gauge & Valve Co., New York, recently was incorporated with a capital stock of \$500,000, by H. Cantor, A. S. Gellis and H. Muller. The company is represented by Jonas & Neuburger, 115 Broadway, New York.

Word has been received to the effect the Peninsula Shipbuilding Yard at Portland, Oreg., has been bought by C. F. Matthews.

It is understood the plant will be operated for the construction of vessels for coastwise trading.

Advices have been received to the effect the Jersey Coast Ferry Co., Tottenville, N. Y., has increased its capital stock from \$1000 to \$600,000.

The site of the former plant of the Willamette Iron & Steel Works at Portland, Oreg., on the west bank of the Willamette river, has been purchased by the commission of public docks at a reported price of \$180,000.

It is understood that an arrangement has been effected whereby the Harriman Industrial Corp., 542 Fifth avenue, New York, will assume the duties of sales agent for the Merchant Shipbuilding Corp. for structural and general engineering work.

The Merritt-Chapman Wrecking Co. recently received the contract to remove the steamship Katahdin, which was sunk in Philadelphia harbor.

The Heinson Boat Building & Hauling Co. of New York, is the name of a new company recently incorporated under the laws of New York. The company will engage in boat building and general repair work and is represented by Cole & Robertson, 154 Nassau street, New York.

Work of dismantling the plant of the Chickasaw Shipbuilding & Car Co. has been started. About 100 workmen have been put to work by the company. The plant, which is scarcely four years old, was erected at a cost of several millions, and every building except the power station, main stores, plate shop and acetylene gas plant will be scrapped, it is understood. The entire plant railroad, with

the exception of the part needed for use at the power station, will be scrapped immediately.

A New York charter to deal in coal, coke, ores, scrap, iron and steel products and ferro alloys, and to do a general importing and exporting business, recently was granted to Lippincott, Mills & Co., which has offices at 17 Battery place, New York, and in the Hippodrome building, Cleveland.

Receivers have been appointed for the Globe Shipbuilding & Drydock Co. upon the petition of creditors, which was filed by the N. W. James Lumber Co. The receivers have been directed to complete repairs on vessels now under contract and to that end operate the plant. Estimates place the company's indebtedness at about \$2,300,000 while its assets are \$4,214,000. It has a floating drydock with a lifting capacity of 9000 tons. The company was formerly located at Superior, Wis., and removed to Baltimore in 1920. The application for receivership followed the failure of western interests in the company to ratify a proposed financing plan.

Orders authorizing the sale of all the property of the Mobile Shipbuilding Co., exclusive of real estate, but including buildings, for \$225,000, recently were issued by the United States district court for the southern division of Alabama. The authority was issued to George T. Rosson and L. Burchell, receivers for the company. The property to be sold includes all machinery and equipment. The company, which was formed several years prior to the outbreak of the war, went into the hands of a receiver last June. Several months ago a petition was filed by the re-

ceivers asking that they be permitted to sell certain material of the company, which petition has been pending since.

Plans for the construction of a huge shipbuilding plant on a site taking up part of Jersey City's south cove, adjoining the Morris canal and east of Henderson street, are reported to have been presented to the Jersey City board of city commissioners, by George L. Record, on behalf of the Weehawken Dry Dock Co. It is understood the plans call for the immediate building of the plant provided the authorities grant the lease asked for. It is reported the company desires a lease of 25 years, with an option of a renewal for a similar period. It is proposed to spend \$300,000 in the development of the tract.

The Adriatic Ship Supply Co., New York, recently was incorporated with a capital stock of \$25,000, by T. A. Ferlazzo, W. L. Stout and others. The company is represented by A. J. Romagna, 110 William street, New York.

The Holbrook Towing & Transportation Corp., New York, recently changed its name to the Triumph Towing & Transportation Co.

The Metals Supply Co., 240 Walnut street, Philadelphia, recently was organized to handle condenser tubes, boiler tubes, copper, brass, zinc plates, fittings, valves and general marine specialties. Officers of the company are Leonard Shortland, H. E. Martin and K. Olsen.

A new firm of foreign freight forwarders and custom house brokers has been formed at Philadelphia, under the name of Keer, Maurer & Co., with offices at 365 Bourse building.

The Bethlehem Shipbuilding Co., San Francisco, has acquired the plant of the Southwestern Shipbuilding Co., Los Angeles, for a branch yard. It is reported plans are under way for the construction of a new drydock capable of handling vessels of 12,000 tons rating. A portion of the plant will be used for steel fabricating. Francis B. Smith will be in charge at the yard.

Harry W. Fawke, San Francisco, for 12 years superintendent of hull construction at the plant of the Moore Shipbuilding Co., and Edward McKarley, Stockton, Cal., have organized the Terminal Iron Works Co. and have acquired the plant and property of the Stockton Iron Works, Stockton, Cal., to manufacture iron and steel products. Preliminary plans are being considered for the erection of a branch plant to be devoted to ship repair work, and to be operated in conjunction with the structural department.

The award of 34 cranes for the Stapleton, Staten Island piers, to the Wellman-Seaver-Morgan Co., Cleveland, recently was made. The award calls for the construction of twenty-six 2½ to 5-ton cranes and eight 1½ to 2½-ton cranes. The total cost of the 34 cranes will be \$324,500. The cranes are to be in operation within a year. It is expected delivery will start in June.

New Trade Publications

SALT DETECTOR—A 4-page leaflet has been published by the McNab Co., Bridgeport, Conn., in which a salt detector for marine boilers is described and illustrated. The presence of salt in boilers is highly objectionable due to the reduced steaming capacity which results from salt deposits on the heating surfaces and because of the dangers of overheating. It is pointed out that about 1/16-inch of clean lime scale deposit on the heating surface of a marine boiler will increase fuel consumption about 15 per cent. The salt detector described in the leaflet works on the principle

Business Changes

Sudden & Christenson have been appointed Pacific coast agents for the Intercoastal Sea Service Carriers, Inc., more recently changed to the Crowell & Thurlow line. The new service will be maintained by four steamers, the A. L. KENT, the FELIX TAUSSIG, the THOMAS P. B. BEALE, and the WILLIAM A. KENNEY, of 9500 deadweight tons each. A 21-day service will be maintained between San Francisco and New York, Baltimore and Philadelphia. Agencies are to be established by Sudden & Christenson, in Seattle and Los Angeles, to look after the interests of the new service.

* * *

George A. Moore & Co., San Francisco, announce their appointment as general agents for a line of motorships to be operated between San Francisco and ports of northern Europe by Norwegian interests. The first vessels will arrive in January. She is the motorship Tosco, 3129 net tons, flying the Norwegian flag, and bound out from Antwerp with a full cargo of German-made merchandise. The announcement says that the new line, which has not been named, will maintain a monthly service into and out of San Francisco.

* * *

Capt. James Rudden, one of the best known shipping men along the San Francisco waterfront, has opened a marine survey office at 24 California street. For many years, Captain Rudden was connected with the Pacific Mail Steamship Co. and with Rinder & Cook, serving the former as chief officer on the steamer KOREA. He was in command of the Whitelaw wrecking steamer GREENWOOD, when the freighter PLEIADES went ashore near Cape San Lucas, pulling her off safely after she had been aground for two weeks.

* * *

Announcement is made that effective Jan. 1 the organization of Tams, Lemoine & Crane, which for 23 years has been prominent as naval architects, marine engineers and ship brokers will be known as Tams & King. Business will be conducted, as in the past, at 52 Pine street, New York.

* * *

Kean-Sharon & Co., ship chandlers, 144 North Second street, Philadelphia, have opened a New York store in charge of P. J. Fitzpatrick, at 3 Coenties slip.

that fresh water has a high electrical resistance which falls rapidly if certain compounds, of which one is salt, are added. Within the salt detector a meter is arranged which indicates the amount of salt in grains per gallon that may pass through the feed line. An incandescent lamp is arranged which will glow at two grains of salt per gallon in the feed water, the glow increasing to a bright light as the density of the feed increases. As a further warning an audible alarm is arranged within the detector which can be set to a fixed percentage of density, which will sound as soon as that fixed density passes through the feed line.

PUMPS—The Gould Mfg. Co., Seneca Falls, N. Y., has published a 16-page booklet in which steam turbine driven centrifugal pumps are described and illustrated. These pumps are direct connected to the steam turbines. The latter are of the single stage, multiple impulse type. These pumps are standardized units and according to the bulletin are particularly adapted for boiler feeding, hot water heating, brine circulating, condenser work, tank filling, fire protection, etc. Complete descriptions are given of the various units with specifications and other data.

MARINE EQUIPMENT—The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., is circulating a booklet in which marine equipment is described and illustrated. The pamphlet shows the diversity of marine products manufactured by the company. Among the subjects discussed are geared turbine propulsion, turbine electric propulsion, diesel electric propulsion, electric deck auxiliaries, generating sets and auxiliaries, drydock and shipyard equipment and are welding sets.

CHAIN—The Howe Chain Co., Muskegon, Mich., has published a 96-page illustrated catalog in which chain for elevating, conveying and power transmission are described and illustrated. The line of chain shown in the catalog substantially covers all of those forms, sizes and attachments which are usually preferred in the successful handling of industrial engineering problems. All chain are standard in every essential and will readily interchange with chain of other manufacturers corresponding in size. In addition to the specifications given, general information is also presented.

PUMPS—The Sterling Iron Works, Inc., Stockton, Cal., is circulating an illustrated folder in which deep well turbines, centrifugal pumps and pressure pumps are shown.

VARNISH—A small 4-page leaflet has been issued by the David B. Crockett Co., Bridgeport, Conn., in which qualities of a spar varnish manufactured by the company are pointed out.

ELECTRIC HOISTS—The Northern Engineering Works, Detroit, has published a 14-page illustrated booklet in which several types of electric hoists are described and illustrated. The illustrations show the hoists handling castings, unloading coal from cars, handling paper, conveying molten iron, handling steel at dipping tanks, handling drop forgings, etc.

BOILER SETTINGS—A 4-page bulletin was recently issued by the Quigley Furnace Specialties Co., Inc., New York, in which the method of applying successful boiler setting patches is described and illustrated in some detail.

COMPRESSORS AND PUMPS—Air compressors and vacuum pumps are described and illustrated in a 16-page illustrated booklet recently published by the Pennsylvania Pump & Compressor Co., Easton, Pa. Both the compressors and pumps are of the straight line, center crank type and are either power or steam driven. In the main these machines comprise a rigid frame, housing the driving parts, entirely enclosing them and providing a well for the continuous lubricating system. At one end are the crankshaft bearings, carrying the crankshaft and flywheels. Other details of construction are given as well as specifications and other data of interest.